APPENDIX D

Material Characterization and Testing

APPENDIX D: Material Characterization and Testing

D.1 Radiological Measurements

Borrow materials were addressed for the presence of radioactivity to ensure that borrow materials do not exceed the radioactivity levels (Ra-226 concentration and gamma radiation fields) that would be present on the remediated RWPR.

Complete soil results are provided in Appendix G; however, a summary of Ra-226 concentrations are provided in the following table. The samples from VHCC road bed material tended to have higher Ra-226 concentrations that approached the clean-up criterion of 2.24pCi/g and had external gamma radiations levels higher the gamma radiation cut-off established for the remediated RPWR. On this basis, these naturally occurring materials from the East Ready Mix (ERM) site were not considered suitable for use in RWPR restoration.

Table D1-1 Summary of Ra-226 Concentrations (pCi/g) in Borrow Materials

Material	Number	Mean	Minimum	Maximum
VHCC	5	1.6	1.3	2.0
ERM	4	1.4	1.0	1.7
East Pit	10	0.64	0.3	0.9
GSG	5	0.63	0.54	0.76
GSG RB	2	0.85	0.7	1
GSG 1inch	1	0.56		

The McConnel East Pit samples had Ra-226 concentrations below the RWPR background level of 1.0pCi/g and this material was used as fill. The road base material was from Gallup Sand and Gravel (GSG) with Ra-226 concentrations at or below the 1.0pCi/g background. The GSG materials were limestone based and the 1 inch granular material had a similar concentration.

LABORATORY COMPACTION CHARACTERISTICS OF SOIL REPORT

Report Number: AG121036.0001 Service Date: 11/01/12 Report Date: 11/01/12



Flora Vista, NM 87415 505-334-2900

Client Project

CRA Services Church Rock Road Attn: Don Osterhout McKinley County 4141 Davis Creek Court Gallup, NM Kalamazoo, MI 49001

> Project Number AG121036

Sample Information

Material Information

Source of Material: Sample Date: 11/01/12 Reboth Pit **Proposed Use:** Roadway Subgrade Sampled By: Client Sample Location: Reboth Pit

Sample Description: Silty Sand

Laboratory Test Data

Result **Specifications** Test Procedure: ASTM D698 Liquid Limit: Test Method: Method B Plastic Limit: Sample Preparation: Wet Plasticity Index: 4.5 Rammer Type: Mechanical In-Place Moisture (%): 80.0 Passing 3/8" (%): Passing #4 (%): 72.0 USCS:

Oversized Particles (%): 20.0 Moisture (%): 1.0 Sieve for Oversize Fraction: 3/8

Assumed Bulk Specific Gravity

of Oversized Particles: 2.7

Corrected for Oversized Particles (ASTM D4718) Maximum Dry Unit Weight (pcf): **Optimum Water Content (%):** 6.5

Uncorrected Values

Maximum Dry Unit Weight (pcf): 125.6 **Optimum Water Content (%):** 7.9

Gravity 2.70 Dry Unit Weight (pcf)

Zero Air Voids Curve for Assumed Specific

Water Content (%)

Comments:

Services: Performed Standard Proctor Test (ASTM D-698)

Terracon Rep.: Dempsey, Wilbert

Reported To:

Contractor: CRA Services

Report Distribution:

(1) Terracon Consultants, Inc. (1) CRA Services, scorning@craworld.com wdempsey@terracon.com

(1) Terracon Consultants, Inc., zcstjean@terracon.com

Reviewed By:

Zachary St Jean Office Manager

Test Methods: ASTM D698

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials. Page 1 of 1

LABORATORY CHARACTERISTICS OF SOILS & AGGREGATES

Report Number: AG121036 0002 Service Date: 11/01/12

Revision 1 -

Report Date: 02/04/13 Flora Vista NM 87415 505 334 2900

Task:

Client

CRA Services Church Rock Road Attn: Don Osterhout McKinley County 200 W Allegan St ste 300 Gallup, NM

Plainwell, MI 49080

Project No. AG121036 Sample No.

CRA Services Samp le Location:

Sample Description: Well Graded Gravel W/Silt & Sand Material Source: 1" Minus Base Course (NMDOT)

Intended Use: Base course gravel Sample Description (USCS) (GW-GM)

Physical Properties

Project

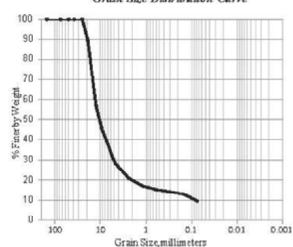
Laboratory Testing Results Spec's. Pass/Fail Moisture Content-Soil, ASTM D2216,% 1.9

Sieve Analysis

ASTM C117 & C130

Q:Q:	Percent	Specif	ications	D (F)
Siewe Size	Passing	Min.	Max.	Pass/Fai
6 in	100			
3 in	100			
2 in	100			
1-1/2 in	100			
l in	100	100		Pass
3/4 in	89	80	100	Pass
1/2 in	.57			
3.8 in	46			
No. 4	28	30	60	Fail
No. 10	21	20	45	Pass
No. 16	17			
No. 30	15			
No. 50	14			
No. 100	13			
No. 200	9.6	3.0	10.0	Pass

Grain Size Distribution Curve



Services:

Terracen Rep: Dempsey, Wilbert

Reported To:

Contractor: CRA Services

Report Distribution

- (1) CRA Services,
- (1) Terracon Consultants, Inc.,
- (1) Terracon Consultants, Inc.,

Lunch/NC:

Zachary St Jean

Office Manager

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

CT0000, 54-09, Bev.S Page 1 of 1

SAMPLE PICK-UP REPORT

 Report Number:
 AG121036,0003

 Service Date:
 11/05/12

 Report Date:
 11/07/12



Client Project

CRA Services Attn: Don Osterhout 4141 Davis Creek Court Kalamazoo, MI 49001

Project Number: AG121036

Church Rock Road

McKinley County

Gallup, NM

Services Requested By: Steve Corning with CRA Services

Material Type: 1-inch minus base course

Material Source: Import

Location Sample Collected: Thoreau Pit

The soil sample collected was transported to our office for laboratory testing.

Testing Requested: Proctor, sieve analysis, Atterberg limits.

Services:

Terracon Rep.: Erica Begay

Reported To:

Contractor: CRA Services

Report Distribution:

(1) ĈRA Services, scorning@craworld.com (1) Terracon Consultants, Inc., zestjean@terracon.com (1) Terracon Consultants, Inc., wdempsey@terracon.com

Reviewed By:

Zachary St Jean Office Manager

LABORATORY COMPACTION CHARACTERISTICS OF SOIL REPORT

Report Number: AG121036.0004 Service Date: 11/06/12 Report Date: 11/07/12



Flora Vista, NM 87415 505-334-2900

Client **Project**

CRA Services Church Rock Road Attn: Don Osterhout McKinley County 4141 Davis Creek Court Gallup, NM Kalamazoo, MI 49001

> Project Number AG121036

Sample Information

Material Information

Source of Material: Rehoboth Pit **Proposed Use:** Subgrade

Sample Date: 11/05/12 Sampled By: Dempsey, Wilbert Sample Location: On-Site Stockpile

Sample Description: Silty Sand with Gravel

Laboratory Test Data

Test Procedure: ASTM D698 Test Method: Method A Sample Preparation: Wet Rammer Type: Mechanical

Maximum Dry Unit Weight (pcf): 117.3 **Optimum Water Content (%):**

Result **Specifications**

Plasticity Index: In-Place Moisture (%): 3.0

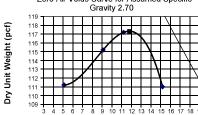
95.5 Passing #4 (%):

USCS: SM

Liquid Limit:

Plastic Limit:

Zero Air Voids Curve for Assumed Specific



Water Content (%)

Comments:

Services: Performed Standard Proctor Test (ASTM D-698)

Terracon Rep.: Dempsey, Wilbert

Reported To:

Contractor: CRA Services

Report Distribution:

(1) Terracon Consultants, Inc. (1) CRA Services, scorning@craworld.com wdempsey@terracon.com

(1) Terracon Consultants, Inc., zcstjean@terracon.com

Reviewed By: 30 C St. The

Zachary St Jean Office Manager

Test Methods: ASTM D698

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

Page 1 of 1

LABORATORY COMPACTION CHARACTERISTICS OF SOIL REPORT

Report Number: AG121036.0005 Service Date: 11/08/12

Report Date: 11/15/12 Revision 1 - Proctor



Flora Vista, NM 87415 505-334-2900

Client Project

CRA Services Church Rock Road Attn: Don Osterhout McKinley County 4141 Davis Creek Court Gallup, NM Kalamazoo, MI 49001

> Project Number AG121036

Sample Information

Material Information

Source of Material: Thoerau Pit

Proposed Use: Roadway Aggregate Base Course Sample Date: 11/06/12 Sampled By: Erica Begay Sample Location: Thoreau Pit

Sample Description: Well Graded Gravel with Silt and Sand

Laboratory Test Data

Result **Specifications** Test Procedure: ASTM D698 Liquid Limit: Non-plastic Maximum 25 Test Method: Method C Plastic Limit: Non-plastic Sample Preparation: Wet Plasticity Index: Non-plastic Maximum 6 In-Place Moisture (%): Rammer Type: Mechanical 1.9 92.0 Passing 3/4" (%): 49.0 Passing 3/8 " (%): USCS: GW

Oversized Particles (%): 8.0 Moisture (%): 1.0 3/4 Sieve for Oversize Fraction:

Assumed Bulk Specific Gravity

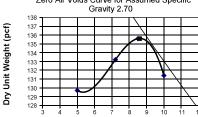
of Oversized Particles: 2.7

Corrected for Oversized Particles (ASTM D4718) Maximum Dry Unit Weight (pcf): **Optimum Water Content (%):** 8.6

Uncorrected Values

Maximum Dry Unit Weight (pcf): 133.3 **Optimum Water Content (%):** 9.3

Zero Air Voids Curve for Assumed Specific



Water Content (%)

Comments:

Performed Standard Proctor Test (ASTM D698), Seive Analysis (ASTM C136) and Liquid Limit, Plastic Limit (ASTM Services:

D4318)

Terracon Rep.: Erica Begay

Reported To:

Contractor: CRA Services

Report Distribution:

(1) Terracon Consultants, Inc. (1) CRA Services, scorning@craworld.com wdempsey@terracon.com

(1) Terracon Consultants, Inc., zcstjean@terracon.com

Reviewed By:

Zachary St Jean Office Manager

Test Methods: ASTM D698

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials. Page 1 of 1

LABORATORY CHARACTERISTICS OF SOILS & AGGREGATES

Report Number: AG121036.0005

Service Date: 11/08/12

Report Date: 11/15/12 Revision 1 - P1

Task:

ClientProjectCRA ServicesChurch Rock RoadAttn: Don OsterhoutMcKinley County4141 Davis Creek CourtGallup, NM

Kalamazoo, MI 49001

Project No. AG121036 Sample No.

Sample Location: Thoreau Pit

Material Source: Gallup Sand and Gravel Sample Description: Well Graded Gravel with Silt and Sand

Intended Use: 1-inch minus Aggregate Roadbase Sample Description (USCS) (GW)

Physical Properties

	I Hystett I Toperties				
Laboratory Testing	Results		pec's	š <u>.</u>	Pass/Fail
Liquid Limit, ASTM D4318	NV	0	-	25	Pass
Plastic Limit, ASTM D4318	NP		-		
Plastic Limit, ASTM D4318	NP	0	-	6	Pass
Moisture Content- Soil, ASTM D2216, %	1.9		-		

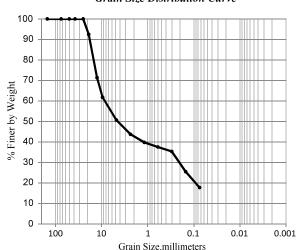
Sieve Analysis ASTM C422

Percent Specifications Sieve Size Pass/Fail Passing Min. Max. 6 in 100 3 in 100 2 in 100 1-1/2 in 100 100 1 in 100 92 3/4 in 80 100 Pass 1/2 in 59 49 3/8 in No. 4 35 30 60 Pass No. 100 26 20 45 Pass No. 16 21 No. 30 17 14 No. 50 12 No. 100 9.1 No. 200 3.0 10.0 Pass

Grain Size Distribution Curve

Flora Vista, NM 87415

505-334-2900



Services: Performed Standard Proctor Test (ASTM D698), Seive Analysis (ASTM C136) and Liquid Limit, Plastic Limit (ASTM

Terracon Rep: Erica Begay

Reported To:

Contractor: CRA Services Lunch/NC:

Report Distribution

(1) CRA Services, (1) Terracon Consultants, Inc.,

(1) Terracon Consultants, Inc.,

Daviowed D

Zachary St Jean

Office Manager

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

CT0002, 5-6-09, Rev.5 Page 1 of 1

FIELD DENSITY TEST REPORT

Report Number: AG121036.0006 **Service Date:** 11/05/12 **Report Date:** 11/09/12



Flora Vista, NM 87415 505-334-2900

Task:
Client

Project

CRA Services Church Rock Road
Attn: Don Osterhout McKinley County
4141 Davis Creek Court Gallup, NM
Kalamazoo, MI 49001

Project Number: AG121036

Materi	ial Information						Lab T	est Data	Project Requirements	
Mat. No.	Proctor Ref. No. AG121036.0004	Classification	on and Desc	ription	Test	oratory Method M D698	Optimum Water Content (%) 11.8	Max. Lab Density (pcf) 117.3	Water Content (%) 9.8 - 13.8	Minimum Compaction (%) Min 95
Field ⁻	Test Data				Probe	Wet	Water	Water	Dry	Percent
Test No.	Test Loca	tion	Lift / Elev.	Mat. No.	Depth (in)	Density (pcf)	Content (pcf)	Content (%)	Density (pcf)	Compaction (%)
	Road Way, Subgrad	e (fill locatio	ns)							
1	30' south of Bridge, centerline	at roadway	-1.0 FSG	1	12	123.7	11.1	9.9	112.6	96
2	180' south of Bridge Roadway centerline colvert)	*	-1.0 FSG	1	12	123.6	11.3	10.1	112.3	96
3	580' south of Bridge roadway centerline colvert)	*	-1.0 FSG	1	12	124.5	11.1	9.8	113.4	97
Datum:	FSG = Finished Gra	de			Serial	No: 38536	Std. C	nt. M:634	Std. Cn	t. D: 2033

Comments: Test and/or retest results on this report meet project requirements as noted above.

Services: Perform in-place density and moisture content testing to determine percent compaction and material moisture

content.

Terracon Rep.: Dempsey, Wilbert **Reported To:** Steve Corning, CRA **Contractor:** CRA Services

Report Distribution:

(1) CRA Services, scorning@craworld.com (1) Terracon Consultants, Inc., wdempsey@terracon.com

Reviewed B

Zachary St Jea Office Manag

(1) Terracon Consultants, Inc., zcstjean@terracon.com

Test Methods: ASTM D6938

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

CR0007, 4-17-12, Rev.5 Page 1 of 1

FIELD DENSITY TESTING REPORT

 Report Number:
 AG121036.0006

 Service Date:
 11/05/12

 Report Date:
 11/09/12



Client Project

CRA Services Attn: Don Osterhout 4141 Davis Creek Court Kalamazoo, MI 49001 Church Rock Road McKinley County Gallup, NM

Project Number: AG121036

Services Requested By: Steve Corning with CRA

Earthwork Contractor: CRA

Observed Location(s): Roadway Subgrade (Fill locations)

Subgrade Review: Prior to the placement of fill the subgrade was reviewed and consisted of Silty Sand, with

Gravel. The subgrade was observed to be firm and stable.

Fill Type Placed: Structural Fill

Proctor No. (s): AG121036.0004

Fill Description: Silty Sand, with Gravel

Source of Fill: Imported from Rehoboth, Pit (McConnell)

Fill Placement: The fill was observed to be placed in approximately 12-inch thick lifts. Compactive efforts

were applied with a vibratory smooth-drum roller and fully loaded, Belly Dump Trucks. The

fill placed appeared firm and stable during the application of compactive efforts.

Field Density Test Results: Field density tests were conducted on the fill placed today utilizing the nuclear method

(ASTM D6938). 3 field density tests were performed. The test results met the minimum specified 95% compaction requirement as compared to ASTM D698. Refer to the attached

Field Density Test Summary for individual test data.

Reported To: Steve Corning with CRA

Services: Perform in-place density and moisture content testing to determine percent compaction and material moisture content.

Terracon Rep.:Dempsey, WilbertReported To:Steve Corning, CRAContractor:CRA Services

Report Distribution:

(1) ĈRA Services, (1) Terracon Consultants, Inc., scoming@craworld.com wdempsey@terracon.com (1) Terracon Consultants, Inc., zestjean@terracon.com

Reviewed By:

Zachary St Jean Office Manager

FIELD DENSITY TEST REPORT

 Report Number:
 AG121036.0007

 Service Date:
 11/06/12

 Report Date:
 11/09/12

 Task:
 11/09/12

Terracon
#4 A CR 3499

Flora Vista, NM 87415 505-334-2900

Client

Project

CRA Services Church Rock Road
Attn: Don Osterhout McKinley County
4141 Davis Creek Court Gallup, NM
Kalamazoo, MI 49001

Project Number: AG121036

Mater	ial Information						Lab Test Data		Project Requirements	
Mat.		Classificatio		cription	Test	oratory Method	Optimum Water Content (%)	Max. Lab Density (pcf)	Water Content (%)	Minimum Compaction (%)
1	AG121036.0004 Si	lty Sand with	Gravel		AST	M D698	11.8	117.3	9.8 - 13.8	Min 95
Field	Test Data				Probe	Wet	Water	Water	Dry	Percent
Test No.	Test Location	on	Lift / Elev.	Mat. No.	Depth (in)	Density (pcf)	Content (pcf)	Content (%)	Density (pcf)	Compaction (%)
	Roadway, Subgrade (from hwy 56	66 to bridg	ge)						
4	50' north and 3' east of centerline and roadway centerline, intersection	ay	FSG	1	10	127.0	11.9	10.3	115.1	98
5	230' north and 2' east 566 centerline and ro- centerline, intersectio	of hwy adway	FSG	1	10	129.0	11.5	9.8	117.5	100
6	420' north and 1' wes 566 centerline and ro- centerline, intersectio	t of hwy adway	FSG	1	10	127.4	11.7	10.1	115.7	99
7	640' north and 3' east 566 centerline and ro	of hwy adway	FSG	1	10	128.7	12.0	10.3	116.7	99
8	centerline, intersection 840' north and 2' west 566 centerline and rocenterline, intersection	t of hwy adway	FSG	1	10	128.6	11.5	9.8	117.1	100
9	1005' north and 1' eas 566 centerline and rocenterline, intersectio	st of hwy adway	FSG	1	10	130.1	11.7	9.9	118.4	100+
10	1170' north and 1' we 566 centerline and ro- centerline, intersectio	st of hwy adway	FSG	1	10	124.4	11.7	10.4	112.7	96
11	1420' north and 2' eas 566 centerline and ro- centerline, intersectio	st of hwy adway	FSG	1	10	126.3	12.1	10.6	114.2	97
12	1610' north and 1' we 566 centerline and ro- centerline, intersectio	st of hwy adway	FSG	1	10	127.4	11.9	10.3	115.5	98
13	1740' north and 3' eas 566 centerline and rocenterline, intersection	st of hwy adway	FSG	1	10	126.1	11.4	9.9	114.7	98
Datum:	FSG = Finished Subg	rade			Serial	No: 38536	Std. C	nt. M:623	Std. Cn	t. D: 2024

Comments: Test and/or retest results on this report meet project requirements as noted above.

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

FIELD DENSITY TEST REPORT

Report Number: AG121036.0007 **Service Date:** 11/06/12 **Report Date:** 11/09/12



Flora Vista, NM 87415 505-334-2900

Task:
Client

Project

CRA Services Church Rock Road
Attn: Don Osterhout McKinley County
4141 Davis Creek Court Gallup, NM
Kalamazoo, MI 49001

Project Number: AG121036

Services: Perform in-place density and moisture content testing to determine percent compaction and material moisture

content.

Terracon Rep.: Dempsey, Wilbert **Reported To:** Steve Corning, with CRA

Contractor: CRA Services

Report Distribution:

(1) CRA Services, scorning@craworld.com (1) Terracon Consultants, Inc., wdempsey@terracon.com

Reviewed By

Zachary St Jea Office Manage

(1) Terracon Consultants, Inc., zcstjean@terracon.com

Test Methods: ASTM D6938

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

CR0007, 4-17-12, Rev.5 Page 2 of 2

FIELD DENSITY TESTING REPORT

 Report Number:
 AG121036.0007

 Service Date:
 11/06/12

 Report Date:
 11/09/12



Client Project

CRA Services Attn: Don Osterhout 4141 Davis Creek Court Kalamazoo, MI 49001 Church Rock Road McKinley County Gallup, NM

Project Number: AG121036

Services Requested By: Steve Corning with CRA

Earthwork Contractor: CRA

Observed Location(s): Roadway Subgrade from HWY 566 to Bridge

Subgrade Review: Prior to the placement of fill the subgrade was reviewed and consisted of Silty Sand with

Gravel. The subgrade was observed to be firm and stable.

Fill Type Placed: Structural Fill
Proctor No. (s): AG121036.0004

Fill Description: Silty Sand with gravel

Source of Fill: Imported from Rehoboth, pit (McConnell)

Fill Placement: The fill was observed to be placed in an approximately 12-inch thick lift. Compactive efforts

were applied with a vibratory smooth-drum roller and fully loaded, belly dump trucks. The

fill placed appeared firm and stable during the application of compactive efforts.

Field Density Test Results: Field density tests were conducted on the fill placed today utilizing the nuclear method

(ASTM D6938). 10 field density tests were performed. The test results met the minimum specified 95% compaction requirement as compared to ASTM D698. Refer to the attached

Field Density Test Summary for individual test data.

Reported To: Steve Corning with CRA

Services: Perform in-place density and moisture content testing to determine percent compaction and material moisture content.

Terracon Rep.: Dempsey, Wilbert **Reported To:** Steve Corning, with CRA

Contractor: CRA Services

Report Distribution:

(1) CRA Services, (1) Terracon Consultants, Inc., scorning@craworld.com (1) Terracon Consultants, Inc., zestjean@ferracon.com (2) zestjean@ferracon.com

Reviewed By:

Zachary St Jean Office Manager

FIELD DENSITY TEST REPORT

 Report Number:
 AG121036.0009

 Service Date:
 11/12/12

 Report Date:
 11/15/12

 Task:
 11/15/12



Flora Vista, NM 87415 505-334-2900

Client

Project

CRA Services Church Rock Road
Attn: Don Osterhout McKinley County
4141 Davis Creek Court Gallup, NM
Kalamazoo, MI 49001

Project Number: AG121036

Mater	rial Information	1					Lab T	est Data	Project Requirements	
Mat. No.	Proctor Ref. No. AG121036.0004	Classificati Silty Sand wi	ion and Des th Gravel	cription	Test	oratory Method M D698	Optimum Water Content (%) 11.8	Max. Lab Density (pcf) 117.3	Water Content (%) 9.8 - 13.8	Minimum Compaction (%) Min 95
Field Test No.	Test Data	cation	Lift / Elev.	Mat. No.	Probe Depth (in)	Wet Density (pcf)	Water Content (pcf)	Water Content (%)	Dry Density (pcf)	Percent Compaction (%)
	Roadway, Subgra	de (Colvert Fil	ll) 1170' nor	th of hwy	566				'	
14	2' west of roadwa and covert centre	-	FSG	1	12	128.6	13.1	11.3	115.5	98
	Roadway Subgrad	de fill, North of	f bridge to c	attle guar	·d					
15	135' north and 2' centerline and bri		FSG	1	10	129.3	13.2	11.4	116.1	99
16	256' north and 2' centerline and bri		FSG	1	10	124.9	12.2	10.8	112.7	96
17	415' north and 2' centerline and bri		FSG	1	10	125.1	12.9	11.5	112.2	96
18	540' north and 2' centerline and bri		FSG	1	10	125.4	13.6	12.2	111.8	95
Datum	: FSG = Finsihed S	Subgrade			Serial	No: 38536	Std. C	nt. M:633	Std. Cn	t. D: 2043

Comments: Test and/or retest results on this report meet project requirements as noted above.

Services: Perform in-place density and moisture content testing to determine percent compaction and material moisture

content.

Terracon Rep.: Dempsey, Wilbert **Reported To:** Steve Corning with CRA

Contractor: CRA Services

Report Distribution:

(1) CRA Services, scoming@craworld.com (1) Terracon Consultants, Inc., wdempsey@terracon.com

Reviewed B

Zachary St Jea Office Manag

(1) Terracon Consultants, Inc., zcstjean@terracon.com

Test Methods: ASTM D6938

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

CR0007, 4-17-12, Rev.5 Page 1 of 1

FIELD DENSITY TESTING REPORT

 Report Number:
 AG121036.0009

 Service Date:
 11/12/12

 Report Date:
 11/15/12



Client Project

CRA Services Attn: Don Osterhout 4141 Davis Creek Court Kalamazoo, MI 49001 Church Rock Road McKinley County Gallup, NM

Project Number: AG121036

Services Requested By: Steve Corning with CRA Services

Earthwork Contractor: CRA Services

Observed Location(s): Roadway Subgrade fill from culvert (north of hwy 566) and north of bridge to cattle guard

Subgrade Review: Prior to the placement of fill the subgrade was reviewed and consisted of Silty Sand with

Gravel. The subgrade was observed to be firm and stable.

Fill Type Placed: Roadway subgrade

Proctor No. (s): AG121036.0004

Fill Description: Silty Sand with Gravel

Source of Fill: Imported from Rehoboth Pit

Fill Placement: The fill was observed to be placed in approximately 12-inch thick lifts. Compactive efforts

were applied with a vibratory smooth-drum roller and fully loaded, belly dump trucks. The

fill placed appeared firm and stable during the application of compactive efforts.

Field Density Test Results: Field density tests were conducted on the fill placed today utilizing the nuclear method

(ASTM D6938). 5 field density tests were performed. The test results met the minimum specified 95% compaction requirement as compared to ASTM D698. Refer to the attached

Field Density Test Summary for individual test data.

Reported To: Chad Girrbach with CRA Services

Services: Perform in-place density and moisture content testing to determine percent compaction and material moisture content.

Terracon Rep.: Dempsey, Wilbert **Reported To:** Steve Corning with CRA

Contractor: CRA Services

Report Distribution:

zcstjean@terracon.com

(1) CRA Services, (1) Terracon Consultants, Inc., scorning@craworld.com (1) Terracon Consultants, Inc., wdempsey@terracon.com (1) Terracon Consultants, Inc.,

Reviewed By:

Zachary St Jean Office Manager

APPENDIX E

Safety, Health, Environmental Monitoring

APPENDIX E: Safety, Health, Environmental Monitoring

E1. Health and Safety Training

Health and Safety training including site specific and radiation safety induction training was conducted and documented for all workers prior to working on the site as outlined in the RWPR Removal Action Plan. The training covered radiation characteristics and properties, background radiation, sources of radiation, biological effects, radiation monitoring, and site hazards. A daily safety briefing was held each morning prior to commencing work.

Monitoring for health and safety included the following.

- Air monitoring;
- Personnel Breathing Zone Samples;
- Personnel Radiation Exposure Monitoring.

E2. Air Monitoring

Staplex air samplers with an approximate flow rate of 40 cubic feet per minute (cfm) were used for air monitoring during cleanup operations at the three locations shown in Figure E3-1 and as described in Table E3-1. The glass fiber filters, 8 inch x 10 inch, were analyzed for radium-226 (Ra-226) and total uranium (U). Ra-226 was analyzed by EPA Analytical Method 903.1 (radon emanation) (EPA, 2007). Total U was analyzed using SW-846, 3rd Edition, Method 6020A (inductively couple plasma - mass spectroscopy, ICP-MS) (EPA, 2008). All air monitoring results indicated measured Ra-226 and natural uranium were less than 10% of effluent concentrations from 10 CFR 20 Appendix B Table 2 as shown in Table E3-2 and less than 1% of the applicable occupational DACs from 10 CFR 20, Appendix B, Table 1.

E3. Personnel Breathing Zone Samples (lapel)

Worker breathing zone (BZ) air sampling was performed with SKC AirChek pumps during a variety of work activities on at least two days per week. The filters were analyzed for Ra-226 and U. Ra-226 was analyzed by EPA Analytical Method 903.0 (radon emanation) (EPA, 2007). Total U was analyzed using Method 6020A (inductively couple plasma - mass spectroscopy, ICP-MS) (EPA, 2008).

Worker BZ air sample results are consistent with environmental air sampling results. All BZ results, as shown in Table E3-3, indicated measured Ra-226 and natural uranium were both less than 1% of the applicable occupational DACs from 10 CFR 20, Appendix B, Table 1.

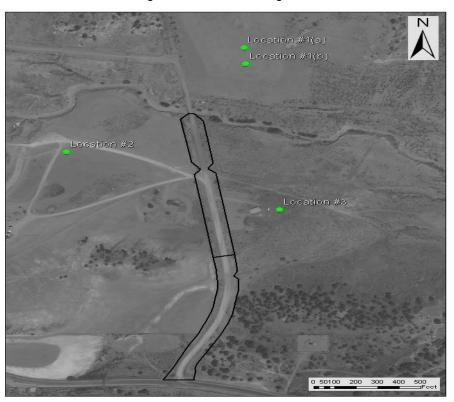


Figure E3-1 Air Monitoring Stations

Table E3-1 Location of Air Sampling

Sample Location	Northing Easting	General Location	Date
Location #1a	N 1698100 E 2524242	Top of Church Rock (CR1) Waste Rock	From 10-6-2012 to 10-8- 2012 1:16 PM
Location #1b	N 1697992 E 2524250	Top of Church Rock (CR1) Waste Rock	From 10-8-2012 1:16 PM to end of project
Location #2	N 1697379 E 2523412	West Side of RWPR (Near community entrance -same location as UNC sample)	From beginning to end of project
Location #3	N 1696980 E 2524409	East Side of RWPR (just east of RWPR)	From beginning to end of project

Table E3-2 Air Sampling Results

				Ra-226		U-Nat	
			Public E		ation Limit Column 1(µC	10CFR20 Appendix Ci/ml)	
				9.0E-13	9.0E-14		
Sample ID	Date	Sample Location	Results (µCi/ml)	Ratio (Result/Limit)	Results (µCi/ml)	Ratio (Result/Limit))	
RWPR-AS-065	10/6/2012	#1	2.1E-16	0.0002	9.8E-16	0.0109	
RWPR-AS-066	10/8/2012	#1	4.8E-17	0.0001	4.8E-16	0.0054	
RWPR-AS-067	10/9/2012	#1	1.4E-16	0.0002	1.0E-15	0.0114	
RWPR-AS-068	10/10/2012	#1	9.7E-16	0.0011	1.8E-15	0.0197	
RWPR-AS-069	10/11/2012	#1	3.4E-16	0.0004	1.5E-15	0.0171	
RWPR-AS-070	10/12/2012	#1	2.3E-16	0.0003	4.5E-16	0.0050	
RWPR-AS-071	10/13/2012	#1	9.7E-16	0.0011	1.7E-15	0.0188	
RWPR-AS-072	10/13/2012	#2	4.0E-16	0.0004	5.4E-16	0.0060	
RWPR-AS-073	10/13/2012	#3	7.2E-16	0.0008	6.7E-16	0.0075	
RWPR-AS-074	10/14/2012	#1	1.5E-15	0.0016	2.1E-15	0.0236	
RWPR-AS-075	10/14/2012	#2	1.1E-15	0.0012	5.4E-16	0.0060	
RWPR-AS-076	10/14/2012	#3	1.4E-15	0.0015	4.7E-16	0.0053	
RWPR-AS-077	10/15/2012	#1	6.8E-16	0.0008	9.5E-16	0.0105	
RWPR-AS-078	10/15/2012	#2	5.7E-16	0.0006	5.9E-16	0.0066	
RWPR-AS-079	10/15/2012	#3	1.1E-15	0.0013	1.2E-15	0.0135	
RWPR-AS-080	10/16/2012	#1	8.1E-16	0.0009	1.3E-15	0.0142	
RWPR-AS-081	10/16/2012	#3	7.4E-16	0.0008	1.2E-15	0.0129	
RWPR-AS-082	10/17/2012	#1	8.5E-16	0.0009	5.7E-16	0.0063	
RWPR-AS-083	10/17/2012	#2	5.4E-16	0.0006	6.5E-16	0.0072	
RWPR-AS-084	10/17/2012	#3	8.0E-16	0.0009	8.5E-16	0.0095	
RWPR-AS-085	10/18/2012	#1	7.9E-16	0.0009	1.9E-15	0.0213	
RWPR-AS-086	10/18/2012	#3	1.1E-15	0.0013	1.5E-15	0.0172	
RWPR-AS-087 ¹	10/24/2012	#1	1.7E-15	0.0019	4.3E-15	0.0481	
RWPR-AS-088	10/24/2012	#2	6.4E-16	0.0007	8.8E-16	0.0098	
RWPR-AS-089 ¹	10/24/2012	#3	2.0E-15	0.0022	4.6E-15	0.0507	
RWPR-AS-090	10/25/2012	#1	8.0E-16	0.0009	1.0E-15	0.0113	
RWPR-AS-091	10/26/2012	#1	9.2E-16	0.0010	1.1E-15	0.0124	
RWPR-AS-092	10/26/2012	#2	7.8E-16	0.0009	7.1E-16	0.0079	
RWPR-AS-093	10/26/2012	#3	1.0E-15	0.0011	6.0E-16	0.0067	
RWPR-AS-094	10/27/2012	#1	9.8E-16	0.0011	1.3E-15	0.0147	
RWPR-AS-095	10/27/2012	#2	1.3E-15	0.0014	6.2E-16	0.0069	
RWPR-AS-096	10/27/2012	#3	1.3E-15	0.0014	2.2E-15	0.0241	
RWPR-AS-097	10/29/2012	#1	6.4E-16	0.0007	2.3E-15	0.0253	
RWPR-AS-098	10/29/2012	#2	8.9E-16	0.0010	5.2E-16	0.0058	
RWPR-AS-099	10/29/2012	#3	6.3E-16	0.0007	1.0E-15	0.0113	
RWPR-AS-100	10/30/2012	#1	7.2E-16	0.0008	1.3E-15	0.0145	
RWPR-AS-101	10/30/2012	#2	5.2E-17	0.0001	8.3E-16	0.0092	
RWPR-AS-102	10/30/2012	#3	5.8E-16	0.0006	8.9E-16	0.0098	
RWPR-AS-103	10/31/2012	#1	1.6E-16	0.0002	1.3E-15	0.0147	
RWPR-AS-104	10/31/2012	#2	9.8E-16	0.0011	7.0E-16	0.0077	

Table E3-2 Air Sampling Results (Cont'd)

			Ra	a-226	U-Nat		
			Public Effl	uent Concentrati		CFR20 Appendix B	
			9.	0E-13		9.0E-14	
Sample ID	Date	Sample Location	Results (µCi/ml)	11000		Ratio (Result/Limit))	
RWPR-AS-105	10/31/2012	#3	1.6E-16	0.0002	6.4E-16	0.0071	
RWPR-AS-106	11/1/2012	#1	8.2E-16	0.0009	1.6E-15	0.0176	
RWPR-AS-107	11/1/2012	#2	5.9E-16	0.0007	8.5E-16	0.0094	
RWPR-AS-108	11/1/2012	#3	7.1E-16	0.0008	6.7E-16	0.0075	
	•	•	Max ratio	0.0022		0.051	

¹ These samples were found blown over by the wind, face down in the dirt and are not representative.

Table E3-3 Breathing Zone Air Sampling Results

ID	Date	Volume (ml)	Ra-226 (μCi/ml)	U
CR-BZ-014	09 Oct 2012	8.8 E+4	ND	ND
CR-BZ-015	11 Oct 2012	8.2E+4	ND	ND
CR-BZ-016	12 Oct 2012	8.3E+4	ND	ND
CR-BZ-017	15 Oct 2012	8.2E+4	ND	ND
CR-BZ-018	17 Oct 2012	7.3E+4	ND	ND
CR-BZ-019	24 Oct 2012	8.5E+4	8.7E-18	ND
CR-BZ-020	25 Oct 2012	7.9E+4	4.3E-17	ND

ND = non detect

Results not available at the time of this report.

E4. Personnel Radiation Exposure Monitoring

Optically Stimulated Luminescent (OSL) dosimeters were worn by workers to document external radiation exposure above background. All results were less than the minimal dose equivalent of 1 mrem as shown in Table E4-1. Comparatively, typical annual background in New Mexico is 300 - 400 mrem and the limit is $5{,}000$ mrem for trained radiation workers.

Table E4-1 Radiation Exposure Results

	Wear Period 10/1/20112 through 10/31/2012								
Serial #	DDE/LDE/SDE	Serial #	DDE/LDE/SDE						
7251895A	М	7251908A	М						
7251896A	М	7251909A	М						
7251897A	М	7251910A	М						
7251901A	М	7251911A	М						
7251902A	М	7251912A	М						
7251903A	М	7251913A	М						
7251904A	М	7251914A	М						
7251906A	М	7251915A	М						
7251907A	М	7251916A	М						

M = minimal dose equivalent – 1 mrem for OSL (DDE, LDE, and SDE)

DDE = Deep Dose Equivalent; LDE = Lens of Eye; SDE = Shallow Dose Equivalent

Control dose of 18 mrem subtracted

E5. Personnel and Equipment Contamination Monitoring

Based on historical contamination monitoring results at the site, routine monitoring was not conducted. Some judgmental surveys were conducted on equipment when it was removed from the site permanently. These surveys consisted of alpha scans with a Ludlum 4 equipped with a 43-5 detector and smears taken on the equipment analyzed with a Ludlum 2241 equipped with a 43-10 detector. No contamination above background was identified.

Personnel were trained on hygiene techniques (i.e. washing hands prior to eating and wearing leather gloves) to minimize inhalation / ingestion of contamination.

APPENDIX F

Vegetation Data

APPENDIX F: Vegetation Data

The seed mix in the approved Work Plan was modified and approved by the U.S. EPA to account for the addition of a species recommended by the community. Additional changes to seed mix were necessary owing to limited availability of some seeds due to late planting season. The RWPR area was seeded in November 2012 and the seed mixes used are presented in Table F1-1 and Table F1-2 respectively.

Table F 1-1 Recommended Plant Species Seed Mix – September 2012

Scientific Names	Common Names	Pure Live Seed (lbs/acre)	Percent of total
Shrubs/trees			
Artemisia tridentata	Big sagebrush	1.50	8.8
Atriplex canescens	Four-wing saltbush	3.00	17.6
Chrysothamnus nauseosus and spp.	Rubber and other species of rabbitbrush	2.00	11.8
Gutierrezia sarothrae	Sneezeweed	0.50	2.9
Juniperus monsperma	Juniper (seedling)	100/acre	n/a
Krascheninnikovia lanata	Winterfat	1.00	5.9
Pinus edulis	Pinyon pine (seedling)	50/acre	n/a
	Subtotal Shrubs/trees	8.00	47.1
Grasses			
Achnatherum hymenoides	Indian ricegrass	1.00	5.9
Aristida purpurea	Purple three-awn	0.25	1.5
Bouteloua curtipendula	Side-oats grama	0.25	1.5
Bouteloua gracilis	Blue grama	2.00	11.8
Elmus longifolus	Squirreltail	0.25	1.5
Muhlenbergii porteri	Bush muhli	0.25	1.5
Pascopyrum smithii	Western wheatgrass	2.50	14.7
Pleuraphis jamesii	Galleta	0.75	4.4
Poa secunda	Bluegrass	0.25	1.5
Sporobolus aeriodes	Alkali sacaton	0.50	2.9
	Subtotal Grasses	7.00	41.2
Forbs			
Cleome serrulata	Bee plant	0.25	1.5
Heterotheca villosa	Hairy golden aster	0.25	1.5
Linum lewisii	Blue flax	0.25	1.5
Senecio multicapitatus	Groundsel	0.50	2.9
Sphaeralcea coccinea	Scarlet globemallow	0.75	4.4
	Subtotal Forbs	2.00	11.8
	Totals	17.00	

Table F1-2 Recommended Plant Species Seed Mix – October 2012

Scientific Names Common Names		Pure Live Seed (lbs/acre)	Percent of total
Shrubs/trees			
Artemisia tridentata *	Big sagebrush	2.00	11.8
Atriplex canescens *	Four-wing saltbush	1.50	8.8
Chrysothamnus nauseosus and spp. *	Rubber and other species of rabbitbrush	0.25	1.5
Gutierrezia sarothrae *	Sneezeweed	2.00	11.8
Juniperus monsperma	Juniper (seedling)	100/acre	n/a
Artemisia filifolia *	Sand sagebrush	2.00	11.8
Krascheninnikovia lanata	Winterfat	1.00	5.9
Pinus edulis	Pinyon pine (seedling)	50/acre	n/a
	Subtotal Shrubs/trees	8.75	51.6
Grasses			
Achnatherum hymenoides	Indian ricegrass	1.00	5.9
Aristida purpurea *	Purple three-awn	0.50	3.0
Bouteloua curtipendula	Side-oats grama	0.25	1.5
Bouteloua gracilis	Blue grama	1.00	5.9
Elmus longifolus	Squirreltail	0.25	1.5
Muhlenbergii porteri *	Bush muhli	0.00	0.0
Sporobolus cryptandrus *	Sand dropseed	0.25	1.5
Pascopyrum smithii *	Western wheatgrass	0.05	0.3
Pleuraphis jamesii *	Galleta	0.25	1.5
Poa secunda	Bluegrass	0.25	1.5
Sporobolus aeriodes	Alkali sacaton	0.50	2.9
	Subtotal Grasses	4.30	25.5
Forbs			
Cleome serrulata *	Bee plant	0.50	3.0
Heterotheca villosa *	Hairy golden aster	0.05	0.3
Macheranthera tanacetifolia *	Prairie aster	0.05	0.3
Penstemon *	Beard-tongue	0.05	0.3
Linum lewisii *	Blue flax	0.05	0.3
Senecio multicapitatus *	Groundsel	0.00	0.0
Ratibda columnifera *	Yellow prairie coneflower	0.25	1.5
Sphaeralcea coccinea *	Scarlet globemallow	0.00	0.0
Sphaeralcea ambiqua *	Desert globemallow	0.05	0.3
	Subtotal Forbs	1.00	6.0
	Totals	14.05	

Notes:
Seed mix was submitted to U.S. EPA as part of the RWPR Removal Action (Sept, 2012). Penstemon was added after consultation with RWPR community.

Updates were made to the seed mix owing to limited availability of certain species at the time of the required revegetation and these changes are shown with an asterisk.

Recon Inc. 3104 East Camelback Road #507 Phoenix, AZ 85016

Tel: (602) 437-4393 FAX: (602) 957-6885 TRANSMITTAL LETTER

	ch Rock - Fall 2 nley County, NM		PROJECT NO:	
Chac 4141	Services d Girrbach Davis Creek Cou mazoo, Michigan		DATE: November 27, 2012	
WE TRANSMI (x) herewi () in acc		under separate ur request	cover	
FOR YOUR: () approv () review () use	& comment (x)	distribution record as noted below	()information	
THE FOLLOW () drawin () specif () change	gs () ications ()	product data reproducible as noted below	() samples	
Copies	Date	Description	•	_
		Seeding Materi Certificate of		
1	12/28/11	Seed tags Granite Seed	(9 page suppli	
1	11/19/12 11/20/12	Seeding Log	(6 page	s)
		Reference proj	ect specifications Table 4-1	ı
REMARKS:	Submitted for y	our record.		
COFIES TO:				

By: Sam Stevenson

Frem: Granite Seed - Lehi 1697 W 2100 N

Lehi, UT 84043

Mix Name: Church Rock

1-15585

1 pf 9

Mix# 111534

Church Rock

% Pure Common Name	Vari ety	G + D or H	Origin
12.86 FOURWING SALTBUSH	VN8	69-TZ	NM
7.96 WESTERN WHEATGRASS	Amba	91 + 2 = 93	co
6.72 BLUE GRAMA	Bird's Eye	88-TZ	WY
6.23 RUBBER RABBITERUSH	VNS	95-TZ	UT
4.88 BASIN BIG SAGEBRUSH	VNS	91-TZ	UT
2.70 MITERIAL IN	PNL	80-7Z	NM.
3.08 INDIAN RICEGRASS	Nezpar	96 - TZ	WA
249 DESERT GLOBEMALLOW	VNS	89 - TZ	
2.32 JAMES' GALLETA	VIVI	80 + 5.5 = 95.5	TX
1.76 YELLOW PRAIRIE CONEFLOWER	Stillwater	84 + 0 = 84	WA
1.64 ALKALI SACATON	∨N8	90 + 0 = 90	NM
1.57 SAND SAGESRUSH	VNS	94 -TZ	ŲΤ
1.56 PALMER PENSTEMON	VNB,	96 -TZ	NV
0.87 PRAIRIE ABTER	VNS	76 + 10 = 85	CA
0.91 BLUEGRASS, SANDBERG	VNS	91 -TZ	VA(A
0.80 SIDEOATS GRAMA	∨aughn	92 -TZ	NM
0.79 ROCKY MOUNTAIN BEEPLANT	VNS	94 -TZ	co
0.78 BOTTLEBRUSH SQUIRRELTAIL	VNS	95 -TZ	WA
0.77 PURPLE THREEAWN	VNB	98-TZ	AZ
0 77 LEWIS BLUE FLAX	Appar	96 + 0 = 96	WA
0.75 SAND DRCPSEED	VNS	98-TZ	co

0.84 Other Crop Date Tested: 28-DEC-11 36.81 Inert Matter % Hard Seed: Q.QD

0 03 West Seed Naxipus Wesd: avens fatus, crabgrass, large barnyardgrass

Net Weigh: 18 50 Lbs. PLS 33.80 Lba Bulk

Coverage: 1 Acre

NOTICE TO BUYER LIMITATIONS OF WARRANTIES AND REMEDIES

Crop yield and quelty are dependent upon many fair-tire beyond the control of the labeled selfer and NC WARRANTY is made for crop yield and quelty. "In helicit selfer we may that all send note has been labeled as required under applicable sets and fagure seed the send that the sead cont of many labely helicity is not recognized teleproce." THIS WARRANTY IS IN LEU OF ALL OTHER WARRANTES, EXPRESS OR IMPLED, INCLUDING WARRANTES OF MERCHANTABLITY AND FITTERS FOR A PARTICLE, OR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND SEY OND THE DESCRIPTION ON THE LASEL.

No claim shall be asset a gealest the labeby safer unless Buyer reports to the labeled celler within a re-seatable period after discovery (not 91%-cest filmly days), any condition that might lead to a complaint. BUYER'S EXCULINY REMEDY FOR ANY CLAM OR LOCK, RESULINY REPORTS REMEDY FOR ANY CLAM OR LOCK, RESULINY REPORTS REMEDY FOR ANY REPORT OF CONTRACT ON REJURGENCE (ROCKLIDING BUY NOT LIMITED TO INCIDENTAL OR CONSEQUENTIAL DAWAGES, SHALL BE LIMITED TO REPRYMENT OF THE PURCHASE PRICE.

By acceptance of the ϵ . Buyer agrees the terms and conditions stated above are a benefit to the bargain and correlated the active agreement fairwent Buyer and the labbade state. Buyer shall return the original congenit

NOTICE: REQUIRED ARBITRATION / CONCILIATION / MEDIATION

The seed laws of are an initiate including Arxaness, California, Calonado, Florida, Georgia, Idaho, Illinois, Indiana, Miness- a, Mesiasigio, North Dakota, South Carolina (Section 45-24-280). South Dakota, Toxas and **-shiption require soldrail-inc. concollistion or resident of disputate volving sligned statistics are selected to the selected special policy and sold special sellar. North Carolina of fers an eletransive to court entire that show claims to be investigated and heard of series language and the selected special selected selected special selected selected special selected select

Ship To: Recon, Inc.

From: Granite Seed - Lehi - 1697 W 2100 N

Lehi, UT 84043 Mix Name: Church Rock

1-15585

2 of 9

Mix# 111534

Church Rock

% Puna	Comm pri Name	Vari sty	G + D or H	Origin
12.86	FOURWING SALTBUSH	VNS	89 -TZ	. INM
7.86	WESTERN WHEATGRASS	Amias	91+2=93	co
6.72	BLUE GRUMA	Bird's Eye	88-TZ	WY
5 25	TUBE OF THUBITERUSH	VNS	122	l _{IJT}
4.88	Sasin Br) Sagebrush	VNS	91-TZ	Įu⊤
3.70	WINTERFAT	VNS .	80-TZ	NM
3.08	INDIAN FICEGRASS	Nezpar ·	96-TZ	WA
2.49	DESERT GLOBEMALLOW	VNB	89 -TZ	i
2.82	JAMES GALLETA	Viva	90 + 5.6 = 95.5	TX
1.76	YELLOW PRAIRIE CONEFLOWER	Stilwater	84 + 0 = 84	WA
1.64	ALKALI SACATON	VNS .	90 + 0 = 90	NM
1.57	SAND SAGEBRUSH	VNS	B4 -TZ	UT
1.56	PALMER PENSTEMON	VN8	95-TZ	NY
0.87	PRAIRIE ASTER	VNB	75 + 10 = 85	CA
0.81	BLUEGRASS, SANDBERG	VNS	91-TZ	WA
0.80	SIDEOATS GRAMA	Vaughn	92-TZ	NM
0.79	ROCKY MOUNTAIN BEEPLANT	VNS	94 - TZ	co
0.78	SOTTLEBRUSH SQUIRRELTAIL	VNS	96-TZ	WA
0.77	PURPLE THREEAWN	VNS	96-TZ	AZ
0.77	LEWIS BLUE FLAX	Appar	96 + 0 = 96	100
0.75	SAND DROPSEED	VNS	98 -TZ	Îca

2.6 19	AND DROPACED				SMA			98-1.	۷			100	J
0.04	Other Crop	Date Tex	ed:		28	DEC-	11			$\overline{}$			_
36 81	Inert Matter	% Hard S	eed:		0.0	3D							
0.03	Weed Seed			. N	oxlau:	s Wéiss		na fa myard	tua, cr grass	abgra	159, Is	rge,	
	Net Weight:	18.60	Lbs	i s	- 55	39	.80		Lbs.	– Bulk			-

Coverage: 1 Acre

NOTICE TO BUYER LUNTET HIS OF WARRANTIES AND REMEDIES

Crop yield and quelity are dependent upon many factors beyond the control of the labeled seller and NO WARRANTY is made for crop yield and quelity. The labeled seller warrants their all seed and has been labeled seller warrants and all seed and has been labeled as required under septicable state and details seed lever of the labeled seller warrants. This WARRANTY is IN IN LEU Lot ALL OTHER WARRANTIES OF REAL ED, INCLUDING WARRANTIES OF MEGICHAYABUTY AND TRIVESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES OF WARRANTIES OF REPORT THOSE OF A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES OF WHICH EXTEND BEFORD THE DESCRIPTION. ON THE LABEL

No claim shall be essented against the labated sallar unless Buyer reports to the labated sallar within a resonable period of a reducer by find to exceed thirty days), any condition that might lead to a complete. BUYER'S EXCUSIVE REBEDY FOR ANY CLAYMOR, LOSS RESULTION SERVICE REBEDY FOR ANY CLAYMOR, LOSS RESULTION SERVICE REBEDY FOR ANY SERVICE OF CONTRACT ON REGULDENCY BORCUPING BUT NOT LIMITED TO INCIDENTAL OR CONSEQUENTIAL DAMAGES) SHALL SELIMITED TO REPRYMENT OF THE PURCHASE FRICE.

By acceptence of the said, Buyer agrees the terms and conditions stated above are a breaft to the bargain and constitute the setter agreement between Duyer and the liberial select Duyer shall seturn the original unpassed used package to the relabelity above the relabelity and the property of the processor of th

NOTICE: REQUIRED ARBITRATION / CONCILIATION / MEDIATION

The seed leve of sex end state is including Arksmass, Dalifornia, Colonado, Florida, Georgia, Idaho, Illinois, Indiaza, Monasoba, Asaalsabayi, North Dakota, South Carolina (Section 462-1-200), Bouth Dakota, South Carolina (Section 462-1-200), Bouth Dakota, Texas and Washington require architection conceillation are mediation of disquists only only and advised the sex bottom contrain legal actions may be in architecting adjust a valuar. North Carolina of Isra son attendar's to construction that allows claims to be line selegated and heard before the Special seal Board, Accordination (ARC, CO, FLI, ILI, NN, MS, MS, CO, TX, MX, signed only, CO, AC, AL, ID, ND, SD) must be Itilas with the Department of Agriculture of Sead Commissioner (3f) or State Plant Beard (ARI) or Commissioner of Agriculture (3f) or State Plant Beard (ARI) or Commissioner of Agriculture (3f) or State Plant Beard (ARI) or Commissioner of Agriculture (3f) or State Plant Beard (ARI) or Commissioner of Agriculture (3f) or State Plant Beard (ARI) or Commissioner of Agriculture (3f) or State Plant Beard (ARI) or Commissioner of Agriculture (3f) or State Plant Beard (ARI) or Commissioner of Agriculture (3f) or State Plant Beard (ARI) or Commissioner of Agriculture (3f) or State Plant Beard (ARI) or Commissioner of Agriculture (3f) or State Plant Beard (ARI) or Commissioner of Agriculture (3f) or State Plant Beard (ARI) or Commissioner of Agriculture (3f) or State Plant Beard (ARI) or Commissioner of Agriculture (3f) or Commissioner or Commissioner of Commissioner or Commi

Recon Inc.

From: Granite Seed - Lehi

1697 W 2100 N Lehi, UT 84043

Mix Name: Church Rock

1-15585

3 of 9

Mix # 111534

Church Rock

% Puro	Common Name	Variety	G+DorH	Origin
12.88	FOLITMING BALTBUSH	VNB	69 -TZ	NM
7.85	Western Wheatgrass	Arriba	91 + 2 = 93	co
8.72	GLUE GRAMA	Strd's Eye	88 -TZ	WY
5.23	RUBBER RABBITBRUSH	VNS	95 -TZ	UT
4,88	Basin Big Sagebrush	VNS	01-TZ	UT
3.70	WINTERFAT	VNS	80 -TZ	NM
3.08	INDIAN RICEGRASS	Nezpar	06 -TZ	WA
2.49	DESERT GLOBEMALLOW	VNB	89 -TZ	
2.32	JAMES GALLETA	Viva	90 + 5.5 = 95.5	тx
1,78	YELLOW PRAIRIE CONEFLOWER	Stillwater	84 + 0 = 84	WA.
1.84	ALKALI SACATON	VNS	90 + 0 = 90	POM
1.57	SAND SAGEBRUSH	VNS	94 -72	UT
1.58	PALMER PENSTEMON	VNS	95 -TZ	NV
0.87	PRAIRIE ABTER	VNS	75 + 10 = 85	CA
0.81	BLUEGRASS, SANCBERG	VNS	81-TZ	WA
0.80	SIDEOATE GRAMA	Vaugha	92 -TZ	0494
0.78	ROCKY MOUNTAIN BEEPLANT	VNS	94 -YZ	co
0.78	BOTTLEBRUSH BOLIRRELTAIL	VNS	65 -TZ	WA
0.77	PURPLE THREEAWN	VNB	96 -TZ	AZ
0.77	LEWIS BLUE FLAX	Apper	96 + 0 = 98	WA
0.75	SAND DROPSEED	VNS	98 -TZ	co

9.94 Other Crep Date Tested: 28-DEC-11 38-81 (net Matter % Hard Seed; 0.09

0.03 Whod Bood Novious Weed: evens jatus, crabgress, large, barryandgress

banyariges

Not Weight: 18.59 Lbs PLS 33.80 Lbs. Bulk

Coverege: 1 Acre

NOTICE TO BUYER LIMITATIONS OF WARRANTIES AND RESIDUES

Crop yield and quality are dependent upon many factors beyond the control of the intrinsic eller and NO WARRANTY is made for crop yield and quality. The bitshed safer ventratis that all eved calls has been believed as required under applicable sates and defourt should be and that the seed conforms to the ball-description, within recognized informace. THIS WARRANTY IS IN LIKEL OF ALL CITYLING WARRANTES, EPPRESS OR INFUSIO, INCLUDING WARRANTES OF INERCHANTABLITY AND FITTERSS FOR A PARTICULAR PLAPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE LABEL.

No claim shall be experted against the blooked at Part unless Buy or aspects to the behalfs when willists a reasonable product after discoursely (not to exceed thisty city), any condition that night lead to a complaint. BUYERTS EXCLUSIVE REVERTY FOR ANY CALLAND OR LOSS REQUIRITION FOR RESPECTIVE CONTINEAT OR REALIZATION FOR THE REALIZATION FOR THE REALIZATION FOR REALIZATION FOR THE REALIZATION FOR

By socuplance of the need, Buy or agrees the beans and conditions nitated above are a beant it to the bargain and constitute the writer appearant becames flag or and the balants safer. Buy or shall return the original encount beand package to the islabed safer within heady days of incept for a return of the purchase parties if not accepted under three terms.

NOTICE: REQUIRED ARBITRATION / CONCILIATION / MEDIATION

The sead taxe of servard states including Arizanuas, California, California, Gleosga, Idaha, Illania, Indexes, Monasoria, Massackoja, North Cabeka, Bost Adestina (Beschin 45-71-200), Bookh Diakota, Turka and Wilshington regime arthresten, conclusion or describe in the device of servaria and servaria servaria and ser

Ship To: Recon, Inc. 602-437-4393 3719 East Anne Stre Phoenix, AZ 55640

of 8

From: Granite Seed - Lehi 1697 W 2100 N Lehi, UT 84043

Mix Name: Church Rock

1-15585

Mix# 111534

Church Rock

% Pur	e Common Name	∀ari ety	G + D or H	Origin
12.86	FOURWING SALTBUSH	VNS	69 - TZ	NM
7.95	WESTERN WHEATGRASS	Amba	91 + 2 = 93	co
6.72	BLUE GRAMA	Bird's Eye	88 -TZ	wy
6.28	RUBBER RABBITBRUSH	VNS	95 -TZ	UT
4,88	BASIN BIG SAGEERUSH	VNS	91 -TZ	UT
3.70	WINTERFAT	VNS	80 - TZ	NM
3.08	INDIAN RICEGRASS	Nezpar	96-TZ	VVA.
2.49	DESERT GLOBEMALLOW	VNS	89-72	
2.32	JAMES' GALLETA	VIVa	90 + 5.5 = 95.6	TX
1.76	YELLOW PRAIRIE CONEFLOWER	Stillwater	84 + 0 × 84	WA
1-94	AL ALI S. CATOS	VI.	90 -0 = 81	NM
1.57	SAND SAGEBRUSH	VNB	84 -TZ	UT
1.56	PALMER PENSTEMON	VNB	95 -TZ	NV
0.87	PRAIRIE ASTER	VNB	75 + 10 = 65	CA
0.81	BLUEGRASS, SANDBERG	VNS	91 -TZ	WA
0.80	SICEOATS GRAMA	Vaughn	92 -TZ	NM
0.78	ROCKY MOUNTAIN BEEPLANT	VNS	94 -TZ	co
0.76	BOTTLEBRUSH SQUIRRELTAIL .	VNS	96-TZ	WA
0.77	PURPLE THREEAWN	VNS	96-TZ	AZ
0.77	LEWS BLUE FLAX	Appar	98 + 0 = 96	WA
0.75	SAND OROPSEED	VNB	98 - TZ	co

0.04 Other Crop Date Tested: 28-DEC-11 36.81 Inert Matter % Hard Seed . 0.00 0 03 Weed Seed

Noxious Weed: avens fatus, crabgrass, large, barrys ridgrass

Net Weight: 19.50 Lbs. PLS

33.90 Lbs. Bulk

Coverage: 1 Acre

NOTICE TO BUYER LIMITATIONS OF WARRANTIES AND REMEDIES

Crey yield and quality are departed upon many (according on the control of the initiated saliny and NO WARRANTY is made for crey yield and upage. The healest sellent warmen that all send each hat been leaded as imputed under spicious state and federal seed law and that the seed coof own to the libell description. The control of the coofficient of the co

No claim shall be descried against the labeled sear unless Buyer reports to the labeled seller within a reasonable period after discovery (not to access thirty days), any condition that might feed to a complaint. BUYER'S EXCUSTIVE REMEDY FOR ANY CLAIM OR LOSS REGULTION FROM SERVICIO WERE ANY REPORT OF CONTRACT ON REDUIGENCE ROULDING BUT NOT LIMITED TO INCIDENTAL OR CONSEQUENTIAL DAYAGES; SHALL BE LIMITED TO REPAYMENT OF THE RUTCHARE FOR THE STATE OF THE STATE OF

By acceptance of the esed, Buyer agrees the terms and conditions intend above are a burrefit to the bargain and constitute the cells agreement between Duyer and the bloed delice (Buyer shall return the original congenies design accept one after the feeled deliver within hearthy days of receipt for a right of the purchase proces and accepted on are other thanks.

NOTICE: REQUIRED ARBITRATION / CONCILIATION / MEDIATION

The seed leve of sex-and state including Arisanses, California, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Minnesota, Massisspil, North Oskris, South Casolina (Specios 45,27-250), South Dakris, Tuses and Washington require antitation, concollisting or mediation of disputes for only nallegard desired as east of the cade in legislation are represented against a salier. North Carolina of fars an elementar or court action that affords claims to be for saligated and heard before the Speciol Seed Boars. A complaint (seem for ART, C.C.P.L.I.I.N. NN, SM, C.S.C.Y., CM, & speciol corp., C.A.Q.A.D. IN DIS-DIF results in filed with the Department of Agriculture of Seed Court action of seed, copies or plant by an experimental or and Agriculture (South special court action of seed, copies or plant by an experiment or Emmissioner of Agriculture (South special court action of seed, copies or plant by an experiment committee)—AR, I.O. MS, SC.) in NO.; failure to fallow this procedure will limit the smount of demanges recoverable. Carolinal copy of complaint must be sent by registered must be the basic sales as provinged in individual state leve. Information about these requirements may be obtained from the state Department of Agriculture.

Ship To:

Recon, Inc.

Lehi. UT 84043

Mix Name: Church Rock

1-15585

Mix # 111534

Church Rock

% Pure	Common Name	Vari ety	G + D or H	Origin
12.86	FOURWING SALTEUSH	VNS	. 69-TZ	NM
7.95	WESTERN WHEATGRASS	Amba	91 + 2 = 93	co
6.72	BLUE OF MA	Bird's Eye	88-TZ	wy
6.23	RUBBER RABBITBRUSH	1415	95 -TZ	UT
4.88	BASIN BIG SAGEBRUSH	VNS	81 -TZ	T'T
8.70	WINTERFAT .	VNS	80-TZ	NM
3.08	INDIAN RICEGRASS	Nezpar	96 -TZ	WA
2.49	DESERT GLOBEMALLOW	VNS	89 - TZ	ı
2.34	JAMES' GALLETA	VIVa	90 + 5.5 = 95.5	TX
176	YELLOW PRAIRIE CONEPLO L R	Stilwater	84 + 0 = 84	V/A
1.84	ALKALI SACATON	NS.	90 + 0 = 80	NM
1.57	SAND SAGEBRUSH	VNS	94-TZ ·	ĺuт
1.56	PALMER PENSTEMON	VNS	95-TZ	NV
0.87	PRAIRIE ABTER	∨N\$	75 + 10 = 85	CA
0.81	BLUEGRASS, SANDBERG	VNS	81-TZ	WA.
0.80	SICEOATS GRAMA .	∨aughn	82 -TZ	NM
0.78	ROCKY MOUNTAIN BEEPLANT	VNS	94 -TZ	co
0.78	BOTTLEBRUSH SQUIRRELTAIL	VNB	95 -TZ	WA
0.77	PURPLE THREEAWN .	VNB	96 -TZ	AZ
0.77	LEWS BLUE FLAX	Appar	96 + 0 ≈ 96	WA
0.75	SAND DROPSEED	VNS	98 -TZ	co

0.04 Other Crop Date Tested: 36.81 Inext Matter

28-JEC

% Hard Seed: 0.00

0.03 Weed Seed

Noxious Weed: avena fetus, crabgrass, large. lıba ∂ulk

33.80

Lbs PLS

Coverage: 1 Acre

NOTICE TO BUYER LIMITATIONS OF WARRANTIES AND REMEDIES

Net Weight: 18.50

Cray yield and quality are dependent upon many feet on by and the control of the labeled sells are NO AMRICANTY is noted for cray yield and quality. The indexide delere varented him is leaved and he has been labeled are quiter during spicially settler and federal send live and that the seed love and that the seed conforms to the label description, whils recognize othersices. This XMARSANTY IS IN LEU OF ALL OTHER WARRANTES (SEPRESS OR INVESTION COLD NOT WARRANTES OF MERCHATTANTY AND FITNESS FOR A PARTICULAR PURPOSE THERE ARE NO WARRANTES WHICH EXTEND SEYONG THE DESCRIPTION ON THE LABEL.

No claim shall be sestred against the labeled seller unless Buyer reports to the labeled seller within a rescanable period effect discovery (not to exceed thinly deys), any consider his might lead to a complete. BUYER'S EXCUSIVE REMEDY FOR ANY CLAIM OR LOSS REQUIRING PROMEBECH OF VARRANTY, RESEAU OF CONTRACT OR REQUIRING REMCUIRING BUY NOT LIMITED TO INCIDENTIAL OR CONSEQUENTIAL DAMAGES) SHALL BE LIMITED TO REPRYMENT OF THE PURCHASE PRICE.

By acceptance of the axed, Buyer agrees the .some and conditions stated above are a benefit to the bargain and constitute the entire agreement between Buyer and the labeled saller Buyer shall orturn the original unopered saled package to the labeled saler with neeting days or thought one are shall be saled and the sale of the capture of the purchase pack and the purchase of the purchase pack and the purchase package to the purchase pa

NOTICE: REQUIRED ARBITRATION / CONCILIATION / MEDIATION

The seed leve of several states including Arksmars. California, Colorado, Florida, Georgia, Ideho, Illinois, Indiandi, Minnesets, Masslasgia, North Dakots, Scuth Caroline (Selicion 4521-269), Sexth Dakots, Ticke and Waithington require inchration, conceilation or mediation of several recording legislation of cardinal legislation and several recordinal regislation may be implicated against a salars North Caroline of Fars are sitemative to court sotion that allows claims to be investigated and heard but for this Special selfect with the Department of Agriculture of Seat Commissioner (7), or Sets Plant Board CAP, or Commissioner of Agriculture of Seat Commissioner (8) or Sets Plant Board CAP, or Commissioner of Agriculture (9), or Sets Plant Board CAP, or Commissioner of Agriculture (9), or Sets Plant Board CAP, or Commissioner of North Caroline and Capital Capital Regislation Commissioner AR, 10, MS, 50, in NO. feature to close this procedure with limit the amount of damages racer writer. Certified capy of complaint must be set by registered in at the tablestic sears as provided in individual state sex Information about these sequirements may be obtained from thit; state Department of Agriculture.

Ship To

Recon.Inc.

From: Granite Seed - Lehi 1697 W 2100 N Lehl, UT 84043

Mix Name: Church Rock

1-15585

Mix# 111534

Church Rock

% Pure	Common Name	Vari sty	G + D or H	Origin
12.86	FOURWING SALTBUSH	VNS	69-TZ	NM
7.95	WESTERN WHEATGRASS	Artiba	91+2=93	co
6.72	BLUE GRAMA	Bird's Eye	88-TZ	WY
6.23	RUBBER RANGITEF SH	VN8	95-TZ	uт
4.98	BASIN BIG SAGESRUSH	V(\$5.77	91-TZ	ĺυτ
3.70	WITERFAT	VNS.	S TZ	NM
3 08	INDIAN RICEGRASS	Nezpar	98 -TZ	WA
2.49	DESERT GLOBEMALLOW/	VNS	89 -TZ	1
2.32	JAMES' GALLETA	ylva	90 + 5.5 = 95.5	TX
1.76	YELLOW PRAIRIE CONEFLOWER	Stillwater	84 + 0 = 84	WA
1.64	ALKALI BACATON .	VNB .	90 + 0 = 90	NM
1.57	SAND SAGEBRUBH	VNS	94 - TZ	UT
1.56.	PALMER PENSTEMON	8	95-TZ	NV
0.87	PRAIRIE ASTER	VNS	76 + 10 = 86	CA
0.81	BLUEGRASS, SANDBERG	VNS	19. 612	WA
0.90	SIDECATE GRAMA	Vaughn	92-TZ	NM
0.79	ROCKY MOUNTAIN BEEPLANT	VNS	94-TZ	ro
0.78	BOTTLEBRUSH SQUIRRELTAIL	VNS	95-TZ	WA
0.77	PURPLE THREEAWN	VNS	96-TZ	AZ
0.77	LEWS BLUE FLAX	Appar	86 + 0 × 96	WA
0.75	SAND DROPSEED	VN8	98-TZ	co

0.04 Other Crop

36,81 Inert Matter

0.03 Weed Seed

Date Tested:

28-DEC-11 % Hard Seed 0.00

'Noxious Weed: avens fetus, crabgress, large, barryardgress

Lbs. PLS

33.80 Lbs. Bulk

Doverage: 1 Acre

NOTICE TO BUYER LIMITATIONS OF WARRANTIES AND REMEDIES

Nat Waldhi: 18.50

Copy yield and quality are dependent upon many feators beyond the control of the initiatic significant of WARDARTY is notice for copy yield many quality. The inhelined sealer warrest he had all ones and he have limited as the inhelid as investigate under supplicable settle and of feators are level on the third of the sealer of feators are level on the limited description, within recognised to senses. THIS WARDARTY IS IN LEUDON WARDART ON RECOMMENTATION OF TIMESS FOR A PARTICULAR PURPOSE THERE ARE NO WARDARTS WHICH EXTEND BEYOND THE DESCRIPTION ON THE LABOR.

No claim shall be described against the labeled seller unless Buyer reports to the labeled seller within a reasonable period of that discovery (not to exceed thatly day a), any consider in the might lead to a complaint. BUYER'S EXCUSIVE REMEDY FOR ANY CLAM OR LOSS RESULTIONS FROM REMEDY FOR ANY CLAM OR LOSS RESULTIONS FROM REMEDY AND ANY REMEDY ON FOR THE SELLIMING FOR REMEDY REMEDY AND ANY REMEDY AND ANY REMEDY REMEDY AND ANY REMEDY AND ANY REMEDY AND ANY REMEDY REMEDY AND ANY REMEDY ANY REMEDY AND ANY REMEDY ANY REMEDY AND ANY REMEDY ANY REMEDY AND ANY REMEDY ANY REMEDY AND ANY REME

By acceptance of the sead, Buyer agrees the terms and conditions stated above are a benefit to the bargain and constitute the entire agreement between Duyer and his labeled saller Buyer shall return the original unopened seed package to the labeled assist with needing of the constitution of the placehase proce if not acceptat under these terms.

NOTICE: REQUIRED ARBITRATION / CONCILIZATION / MEDILATION

The east lewer of serveral states including Arksmass, California, Colorado, Findée, Georgia, Idaho, Illinois, Indiana, Minnesotta, Massiespi, North Dakota, South Carollina (Section 48-21-380), South Carollina (Section 48-21-380), South Carollina (Section 48-21-380), South Carollina and Archive and Versing International Colorador Section (Section 48-21-380), South Carollina Section 48-21-380, South Section 48-21-380, S

Ship To:

Recon, Inc.

From: Granite Seed - Lehi 1697 W 2100 N Lehi, UT 84043

Mix Name: Church Rock

1-15585

7 of 9

Mix # 111534

Church Rock

% Pure	Common Name	Variety	G + D or H	Origin
12.86	FOURWING SALTBUSH	VNS	69 -TZ	NM
7.95	WESTERN WHEATGRASS	Arriba	91 + 2 = 93	co
6.72	BLUE GRAMA	Blio's Eys	88 -TZ	WY
6.23	RUBBER RAEBITBRUSH	VNB	95 -TZ	UT
4.88	BASIN BIG BAGEBRUSH	VNB	91 -TZ	UT
3.70	WINTERFAT	143	in-TZ	NM
3.00	INDIAN RICEGRABS	Nezpar	96 -TZ	WA
2.49	DESERT GLOBEMALLOW	VNS	BB-TZ	i
2.32	JAMES GALLETA	VIVE	90 + 5.5 = 95.5	TX
176	YELLOW PRAIRIE CONEFLOWER	Stilwater	84-+ 0 = 84	VVA
1 84	ALKALI BACATON	VNS	90 + 0 = 90	NM
1.57	BAND SAGEBRUSH	VNS	94-TZ	UT
1.56	PALMER PENSTEMON	VNS	95-TZ	NV
0.87	PRAIRIE ASTER	VNS	75 + 10 = 85	CA
D.81	BLUEGRASS, SANDSERG	VNS	91-TZ	WA
0.80	SIDEOATS GRAMA	· Vaughn	92-TZ	NM
0.79	ROCKY MOUNTAIN BEEPLANT	VN8 ·	94 -TZ	co
0.78	SOTTLEBRUSH SQUIRRELTAIL	VNS	95 -TZ	VV/A
0.77	PURPLE THREEAVIN	VNB	98 -TZ	AZ
0.77	LEWIS BLUE FLAX	Appar	96 + 0 = 96	WA
0.75	SAND DROPSEED	IVNB	88 -TZ	co

0.04	Other Crop		Date Telated:	28-DEC-11
36.81	Inert Matter	20	% Herd Seed	0.00

O DR Weed Seed

Noxipus Ward: avena fatue, crabgrass, large,

Lbs. Bulk

barmyardgrass

Lbs. PLS

. 33 80

Coverage: 1 Acre

NOTICE TO BUYER LIMITATIONS OF WARRANTIES AND REMEDIES

Net Weight 18.50

Crop yield and quelity are dependent upon many factors buy and the control of the labelist seller and NO WARRANTY is made for crop yield and quelity. The liabeles seller warrants that all sead alot has been labeled as required under spilicable state and facinal sead less wonth that is sead or forms to the label description, within recognized telenome. THIS WARRANTY IS IN LEU OF ALL OTHER WARRANTES, EXPRESS OR INFLED, INCLUDING WARRANTES OF MERCHANTABLITY AND THIS SOFT APARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE LABEL.

No claim shall be asserted against the labeled salar unless Buyer reports to the Jabeled salar within a reasonable period of far discovery (not to access thiny says), any condision that might lead to a complain. BUYER'S EXCUSIVE REVIOU'S REVIOU'S FOR ANY CLAIM OR LOSS RESULTION FROM SEECUL OF WARRANTY, REACH OF CONTRACT ON REQUISIONE ROLLIDING BUT NOT LIMITED TO INCIDENTAL, OR CONSEQUENTIAL DAMAGES) SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRIOR SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRIOR SHALL BE LIMITED TO REPAYMENT OF THE

By acceptance of the seed, Buy or agrees the terms and conditions stated above are a benefit to the bir year end constitute the entire agreement between Buy or and the labeled splice. Buy or whall setum the original empands seed package to the healeds sales within healthy days of receipt for a drough of the purchase price if not accepted order thans terms.

NOTICE: REQUIRED ARBITRATION / CONCILIATION / MEDIATION

The seed leave of are and state including Ariansar, California, Colorada, Florida, Georgia, Idaho, Illinois, Indene, Monestra, Mesialagia, North Dakota, Sauh Carolina (Becono, 48:21:280), Sauh Dahota, Taxas and Weshington require subhration, concellation or mightan of disputes in work pall agriculture and provided and the seed of the protein legislated may be mechatished against a saller. North Darolina of free an eleterative to court color that allows claims to be in resigned and heard before the Special saller, North Darolina of the seed (AP), CA, CA, LD, ND, SD) must be infast with the Department of Agriculture of Seed Commissioner (N) or State Plant Seed (AP) or Commissioner of Agriculture (N) or State Plant Seed (AP) or Commissioner of Agriculture (N) or State Plant Seed (AP) or Commissioner of North Seed

Bhip To:

Recon, Inc.

From: Granite Seed - Lehi 1697 W 2100 N Lehi, UT 84043

Mix Name: Church Rock

1-15585

Mix # 111534

Church Rock

% Pure	Common Name	Variety	G + D or H	Origin
12.86	FOURWING SALTBUSH	VNS	69 - TZ	NM
7.95	WESTERN WHEATGRASS	Amba	81 + 2 = 93	CO
6.72	BLUE GRAMA	Bird's Eye	88-TZ	WY
6,23	RUBBER RABBITBRUSH	VNB	95-TZ	UT
4.88	BASIN BIG SAGEBRUSH	VNB	91-TZ	UΤ
3.70	WINTERFAT	VNB	8D-TZ	NM
3.08	INDIAN RICEGRASS	Nezpar	98-TZ	WA
249	DESERT GLOSEMALLOW	VNS	BS-TZ	
2.32	JAMES' GALLETA	Viva	90 + 5.6 = 95.5	TX
1.78	YELLOW PRAIRIE CONEFLOWER	Stillwater	84 + 0 = 64	WA
1 64	ALKALI BACATON	VNS	20 - 7 - 70	1.164
1.57	SAND SAGERUSI:	VNS	94 -TZ	UT
. 56	PALMER PENSTEMON	VNS .	96 -TZ	NV.
0.87	PRAIRIE ASTER	VNS ·	75 + 10 = 85	CA
0.81	SLUEGRASS, SANDBERG	VNS	91 -TZ	WA
0.80	SIDEOATS GRAMA	Vaughn	92-TZ	NM
0.79	ROCKY MOUNTAIN BEEPLANT	VNS	94 -TZ	co
0.78	SOTTLEBRUSH SQUIRRELTAIL	VNS	95-TZ	WA
0.77	PURPLE THREEAWN	VNB	96-TZ	AZ
0.77	LEWS BLUE FLAX	Appar	96+0=96	VI/A
0.76	SAND DROPSEED	VNS	98-TZ	co

0.64 Other Crop Date Testar TE B1 Inget Ni atter

0.03 Weed Seed

% Hard Seed:

0.00

28-DEC 11

Noklous Waed: avena fetus, crabgrass, large, barnyardgrass

Net Weight: 18.50 Lbs. PLS 33.80 Lbs. Bulk

Coverage: 1 Acre

NOTICE TO BUYER LIMITATIONS OF WARRANTIES AND REMEDIES

Crop yield and quality are dependent upon many factors key and the control of the lisbaid sellar end NO WARRANTY is made for crop yield and quality. This lisbaids sellar warrants this jill sead sold has been lisbaid as required under applicable state and faderal sead less and that the sead confirme to the lista description, which recognized internoes. THIS WARRANTY IS IN LIEU OF ALL OTHER YARRANTIES, EXPRESS OR INFUED, INCLUDING WARRANTIES OF MERCHANTAELITY AND FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND SEYOND THE DESCRIPTION ON THE LABEL.

c'alm arail be assertet against the labeled soller unless Buyer reports to the labeled soller within a resconable period after decid any "ratio Nicese New devel, any condition hist might lead to a complete. BUYER'S EXCUSIVE REVENT FOR ANY CLAM OR LOSS RESULTIONS FROM BREACH OF VERRARTHY, RESCHOOP OF CONTRACT OR RESULTIONS FROM LOUING BUT NOT LIMITED TO INCIDENTAL OR CONSECUENTIAL DAMAGES, SHALL BE LIMITED TO REPAYMENT OF THE RUNCH LASS PRICE A

By acceptance of the esed, Buyer ogrees the terms and conditions stated above are a benefit to the bargein and constitute the states ogneemed between Buyer and the libeded sales: Buyer shell situate the original unopsand seed package to the falleable sales with heaving days or receipt for a first of the purchase price if not accepted under thate serves.

NOTICE: REQUIRED ARBITRATION / CONCILIATION / MEDIATION

The sead leve of sav and states including Arksmass, California, Calondo, Floride, Georgis, Ideho, Illicois, Indiane, Monesata, Massleege, Noth Devota, Sight De rolline (Berolon 49-21-202). Such Davids, Texas and Weshington require softmation, concellation or mediation of disputs are only insight good control of the cont

Recon Inc.

From: Granite Seed - Lehi 1697 W 2100 N Lehi, UT 84043

Mix Name: Church Rock

1-15585

9 of 9

Mix # 111534

Church Rock

% Pure	Common Name	Vari sty	G + D or H	Origin
12.86	FOURWING SALTBUSH	VNS	169-TZ	NM
7.85	WESTERN WHEATGRASS	Arr(tia	91 +.2 = 93	co
8.72	BLUE GRAMA	Bird's Eye	88-TZ	wy
6.23	RUBBER RABBITBRUSH .	VNS	96-TZ	UT
4.88	BASIN BIG SAGEBRUSH	VNS	91-TZ	UT
•.7□	WINTERFAT	VNS	80 -TZ	NM
3.08	INDIAN RICEGRASS	Nezpar	98 -TZ	WA
2.48	DÉSERT GLOBEMALLOW	VN8	89 -TZ	i
2.32	JAMES' GALLETA	VIva	90 + 5.5 = 95.5	TX
178	YELLOW FRAIRIE CONEFLOWER	Stillwater	84 + u = 84	VAGA.
1.64	ALKALI BACATON	VNS	90 + 0 = 80	NM
1.57	BAND SAGEBRUSH	VNS	84 -TZ	Uτ
1.56	PALMER PENSTEMON ·	VNS	95-TZ	NV
0.87	PRAIRIE ASTER	VNS	75 + 10 × 85	CA
0.81	BLUEGRASS, SANDSERG	VNS	91-TZ	WA
0.80	SIDEOATE GRAMA	∨aughn	92-TZ	NM
0.79	ROCKY MOUNTAIN BEEPLANT	VNS	94 -TZ	CD
0.78	BOTTLEBRUSH SQUIRRELTAIL	VNS	95-TZ	WA
0.77	PURPLE THREEAWN	VNS	98-TZ	AZ
ů ,	EM . BLUE FLAX	Appar	96 + 0 = 96	WA
0.75	SAND DROPBEED	VNS	98-TZ	co

0.04	Othe	r Cr	σp					Dat	e Te	ste	d:				26	-DE	C-1	1								
36.81	Inert	Ma	tter					% H	and	80	ed:				0.	00										
0 03	Wee	d Be	be											No		III W	paq		ven:			crab;	g ras	83, I	ang	JB,
		-	-	_	_	_	_	_	-	-	-	_	_	_	_	_	_	_	_	_	_	_`:		_	_	_
			Net	We	ight:		9	25			Ш	bs. I	LS				16	90			Lb	a Bu	lk			

Governge: .fl Acres

NOTICE TO BUYER LIMITATIONS OF WARRANTIES AND REMEDIES

Crop yield and quality are departed upon many factors beyond the control of the lisbeled seller and NO WARRANTY is made for crop yield and quality. The lisbeled seller warrants that all send sold has been labeled as required under applicable state and factors seller and that the seed cort from to the label description, which recognized followers. THIS WARRANTY IS IN LIEU OF ALL CTHER WARRANTES, EXPRESS OR IMPLED, INCLUDING WARRANTES OF MERCHANTABILITY AND FITHERS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION OF THE LABEL.

No claim shall be searted against the labeled seller unless Buyer reports to the labeled seller which a responsible select discovery (not be accessed fairly days), any condition that might lead to a complaint. BUYERTS EXCUSIVE REVEOV FOR ANY CLAIM OR LOSS RESULTIONS FROM BREACH OF VARRANTY, RERACH OF CONTRACTOR OR RESULTIONS FROM CULDING BUT NOT LIMITED TO INCIDENTAL OR CONSEQUENTIAL DAMAGES SHALL BE LIMITED TO REPAYMENT OF THE RUICHARS FROM SHALL BE LIMITED TO REPAYMENT OF THE RUICHARS FROM SHALL BE LIMITED TO REPAYMENT OF THE

By acceptance of the ead, Buyer agrees the terms and conditions stated above are a benefit to the bergain and constitute the extint agreement between Buyer and the basis salar. Buyer shall atturn the original uncpreed seed postage to the leaded salars which moving days or records for a refund of the purchase place in one acceptate uncertaintees terms.

NOTICE: REQUIRED ARBITRATION / CONCILIATION / MEDIATION

The east lever of sav and states including Arksness, California, Colorado, Florida, Georgia, Idehn, Illinois, Izdiana, Minnesota, Massisapia, North Detois, Shaft Carolina (Section 48.21.252), South Detois - Tuxes and Washington require activation, concellution or requisition of disputs in working disputs of section segal actions containing an experience of the section segal actions and the section of section segal actions are settlement to see the section segal action may be maintained against a selet. North Carolina officers are sterredive to court action that allows claims to be in resignated and heard after the Special Seed Seard, According selection, Nav. Nav. Nav. Nav. Sp. CA, CA, DA, ID, ND, SD, wheat he filed with the Department of Apriculture of Sead Commissioner (N) or State Plant Board (AP) or Commissioner of Approxiture, North Seed Commissioner (N) or State Plant Board (AP) or Commissioner (N) or Commissioner

Ship To:

Recon, Inc.

Recon Inc. Seeding LOG

Project Na	eme: Church Ro McKinley	ock - Fall 2012 County, NM	Seeding .
Project No	:		
			Date: 11-19-17
Load # Hydroseed/ (Circle Or	Tackifier		Station+ to+
	Begin Batching	7:48	CAP/Slope of Min
	Begin Seeding	8:28	CAP / 310 Pe of Man
Materials	Used This Load:		
	Wood Mulch Seed Fertilizer Tack Total	Bag(s) Bag(s) Bag(s) Bag(s) Acre(s)	
K # 160 + .		*, • • • • • •	
Load # 7 Hydroseed/ (Circle On	Tackifier e)		Station+ to+
	Begin Batching	9.03	
	Begin Seeding	9:30	Shoulder of Church Rock Mine Rd.
Materials	Used This Load:		Church Rock Mine Kal.
	Wood Mulch Seed Fertilizer Tack Total	Bag(s) Bag(s) Bag(s) Bag(s) Acre(s)	
Daily Tota	ls:	Ac	eres Seeded: 6 AC
Acknowledg	ment and Receipt	of Seed Tags:	
Agency	 -	Sig	gnature

November 16, 2012

Recon Inc. Seeding LOG

Project N		ch Rock - Fall 201: nley County, NM	2 Seeding						
Project N	0:								
			19						
			Date: 11-16-12						
Load # 3	Tackifier		Station+_ to+						
Hydroseed (Circle O	Tackifier		Shoulder of Church Rock F						
(011016 0									
	Begin Bato	thing 10:04	Flats of disturbed dirt						
	Begin Seed	ling 11:46	by caps & slopes.						
Materials	Used This I	Load:							
	Wood Mulch Seed Fertilizer Tack	2.5 Bag(s)							
	Total	2.5 Acre(s)							
	• • • • • •	* * * * * * * * * * * * * * * * * * * *							
Load # 4	(= 1121)		Station+_ to +						
(Circle Or	Tackifier		Shoulder of Church Rock						
	Begin Batc	hing <u>12</u> : <u>03</u>	mine Rd.						
	Begin Seed	ing <u>44:30</u>							
Materials	Used This L	oad:							
	Wood Mulch Seed Fertilizer Tack Total	Bag(s)							
Daily Tota	ıls:	I	Acres Seeded: 2.5 acres						
Acknowledg	ment and Re	ceipt of Seed Tags	:						
Agency		s	ignature						

November 16, 2012

Project Na	ame:	Church Ro McKinley	ck - Fall : County, NM	2012 Seed	ding			
Project No	o:							
							1/19/2012	
Load # Coad # Hydroseed, (Circle On		fier			Sta	tion	_+ to .	
	Begin	Batching	<u>14</u> :,		Mina	CAP		
	Begin	Seeding	<u>15</u> :	<u>ov</u>				
Materials	Used T	his Load:						
	Wood I Seed Ferti Tack Total		30 Bag(s) Bag(s) Bag(s) Bag(s) Acre(s		d 2.4	mpH	67.1° F	
		£ 3 6	• • • • •					
Load # <u>\(\beta\)</u> Hydroseed/ (Circle On		fier					_+_ to _	+
(012010 011		Batching	<u>15:</u>	35	E s	ide of		
	Begin	Seeding	<u> 15: 9</u>	58 /16 29	5			
Materials	Used Th	nis Load:						
	Wood M Seed Fertil Tack Total		30 Bag(s) Bag(s) Bag(s) Bag(s) Acre(s)				
Daily Tota	ls:			Acres	Seeded	l:	<u>k</u>	
Acknowledg	ment an	d Receipt	of Seed Ta	ags:				
Agency				Signati	ure			

Project Name:

Project Na		ck - Fall 2012 County, NM	Seeding		
Project No):				
			Date: <u>/</u> /	1/20/2012	
Load # _/ Hydroseed/ (Circle On	Tackifier			-+ to+_	
	Begin Batching	7:20 E	ast west side of	, Red Water 1	كسا
	Begin Seeding	7:55	Zd.		
Materials	Used This Load:				
	Wood Mulch Seed Fertilizer Tack Total	Bag(s) Bag(s) Bag(s) Bag(s) Acre(s)			
	* * *				
Load # <u>1</u> Hydroseed/ (Circle On			Station		
(circle on	Begin Batching	<u>8</u> :25	Hater ou	of-waited 1hr.	
	Begin Seeding	9:55			
Materia ls	Used This Load:				
	Wood Mulch Seed Fertilizer Tack Total	Bag(s) Bag(s) Bag(s) Bag(s) Acre(s)			
Daily Total	ls:	Ac	res Seeded:	<u>Ø</u>	
Acknowledgr	ment and Receipt	of Seed Tags:			
Agency		Sig	mature		

Project Name:	Church Rock - McKinley Cour		12 Seed	ding	÷ 3		
Project No:							
				Da	te:		
Load # 3 Hydroseed/Tacki (Circle One)	fier			Stati	on+	_ to _	_+
Begin	Batching	10:05	,				
Begin	Seeding	10:40	/1100				
Materials Used T	his Load:						
Seed	lizer z	Bag(s) Bag(s) Bag(s) Bag(s) Acre(s)					
10 n h	- W + W + .	*	6 9 ·				-
Load # 4 Hydroseed/ Tacki (Circle One)	fier			Stati	on+_	_ to	_+ _
Begin	Batching	<u>//</u> :05					
Begin	Seeding	11:20					
Materials Used T	his Load:						
Seed	lizer	Bag(s) Bag(s) Bag(s) Bag(s) Acre(s)				_	
Daily Totals:			Acres	Seeded:	<u>Ø</u>		
Acknowledgment ar	nd Receipt of	Seed Tags	5:				
Agency			Signatu	ıre			

Project Na			ock - Fal County,		2 Seed	ding				
Project No	:									
							Date	11-2	0 - 2012	<u></u>
Load # <u>5</u> Hydroseed/ (Circle On		fier				Sta	ation	+_	_ to	+_
	Begin	Batching	r <u>!</u>	2.15						
	Begin	Seeding	<u>1</u>	2.40						
Materials 1	Used Th	nis Load:								
	Wood M Seed Fertil Tack Total	izer	30 Bag Bag Bag Bag Acr	(s) (s) (s)						
		* * * *	.							
Load # / Hydroseed/ (Circle One		ier				Sta	tion	+_	_ ^{to} -	+
	Begin	Batching	<u> 1</u>	3 . 00						
	Begin	Seeding	<u>1</u>	3:20						
Materials T	Jsed Th	is Load:								
	Wood M Seed Fertil Tack Total	izer	Bag Bag Bag Bag Bag Acre	(s) (s) (s)				/		
Daily Total	.s:				Acres	Seede	d:	Ø	<u> </u>	
Acknowledgm	ent an	d Receip	t of Seed	l Tags	:					
Agency			_	S	ignat	ure				

Recon Inc. Seeding Mix Design

Project Name: Church Rock - Fall 2012 Seeding

McKinley County, NM

Project No:

Materials -

Total area = 8.5 Acres

Seed As specified Wood Mulch 2000 Lb/ Ac = 340.0 Bags Tackifier 150 Lb/ Ac = 25.5 Bags

Seed = 1.0 Acre Wood Mulch 500 Lb/ Ac = 10.0 Bags Tackifier 50 Lb/ Ac = 1.0 Bags

Mulch 1500 Lb/ Ac = 30.0 Bags Tackifier 100 Lb/ Ac = 2.0 Bags

= 2 - 3 Acre Loads 1 - 2.5 Acre Load

 Seed
 (1) Load =
 3.0 Acre

 Wood Mulch
 500 Lb/ Ac =
 30.0 Bags

 Tackifier
 50 Lb/ Ac =
 3.0 Bags

Hydromulch = 8 - 1 Acre Loads 1 - .5 Acre Load

Wood Mulch 1500 Lb/ Ac = 30.0 Bags Tackifier 100 Lb/ Ac = 2.0 Bags

Water As Required

CERTIFICATE OF COMPLIANCE

for

MATERIALS FURNISHED FOR STATE AND FEDERAL AID HIGHWAY PROJECTS

Church Rock - Fall 2012 Seeding McKinley County, NM

Project Name:

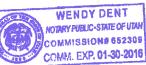
Project No:

Contractor:	Recon Inc. 3104 East Camelback Road, Suite 507 Phoenix, AZ 85016	
Supplier:	Granite Seed 1697 West 2100 N Lehi, UT 84043	
Section	Type and Grade of Material	Oty
	Seed Mix (Attached)	8.5 Ac
conforms with Provisions and	all specified requirements of the Plans. Compared that the above material furnish all specified requirements of the Plans.	nite Seed Company
deposes and say	s that the above is a true and correct	statement.
(signature)		
1		
Dated this 19	5 day of November,	2012. Windy
		WENDY DENT NOTARY PUBLIC-STATE OF UTAN COMMISSION# 652309 COMM. EXP. 01-30-2016

Church Rock - Fall 2012 Seeding McKinley County, NM Recon Inc. November 13, 2012

Seed Mix		
Botanical Name	Common Name	pls#/Ac
Artemisia tridentata	Big Sagebrush	2.00
Atriplex canescens	Four-Wing Saltbush	1.50
Chrysothamnus nauseosus and spg	. Rubber and other species of rabbitbrush	0.25
Gutierrezia sarothrae*	Sneezeweed	
Artemisia Filifolia	Sand Sagebrush	2.00
Krasheninnikovia lanta	Winterfat	1.00
Achnatherum hymenoides	Indian Ricegrass	1.00
Aristida purpurea	Purple Three-awn	0.50
Bouteloua curtipendula	Side-oats grama	0.25
Bouteloua gracilis	blue grama	1.00
Elymus longifolus	squirreltail	0.25
Muhlenbergii porteri*	bush muhli	
Sporobolus cryptandrus	Sand Dropseed	0.05
Pascopyrum smithii	Wester Wheatgrass	0.05
Pieuraphis jamesii	Galleta	0.25
Poa secunda	Bluegrass	0.25
Sporobolus aeriodes	Alkali Sacaton	0.50
Cleome serrulata	Bee Plant	0.50
Heterotheca villosa	Hairy Golden Aster	0.05
Macheranthera Tanacetifolia	Prairie Aster	0.05
Linum lewisii	Blue Flax	0.05
Penstemon (palmeri, eatonil,	Beard-tongue	0.05
strictus, or barbatus)	5-6-60, 6-4-2-6	
Senecio multicapitatus*	Groudsel	
Ratibda columnifera	Yellow Prairie Coneflower	0.25
Sphaeralcea coccinea*	Scarlet Globernallow	
Sphaeralcea Ambigua	Desert Globematiow	0.05
50. \$ 60.0 \$42.0 \$ 60.0 \$20.0 \$0.0 \$0.0 \$0.0 \$0.0 \$0.0 \$0.0		18.50
	WENDY DENT	3.5 Ac
* blot Assilable	WENDY DENT	

*Not Available Substitution (bolded italics)



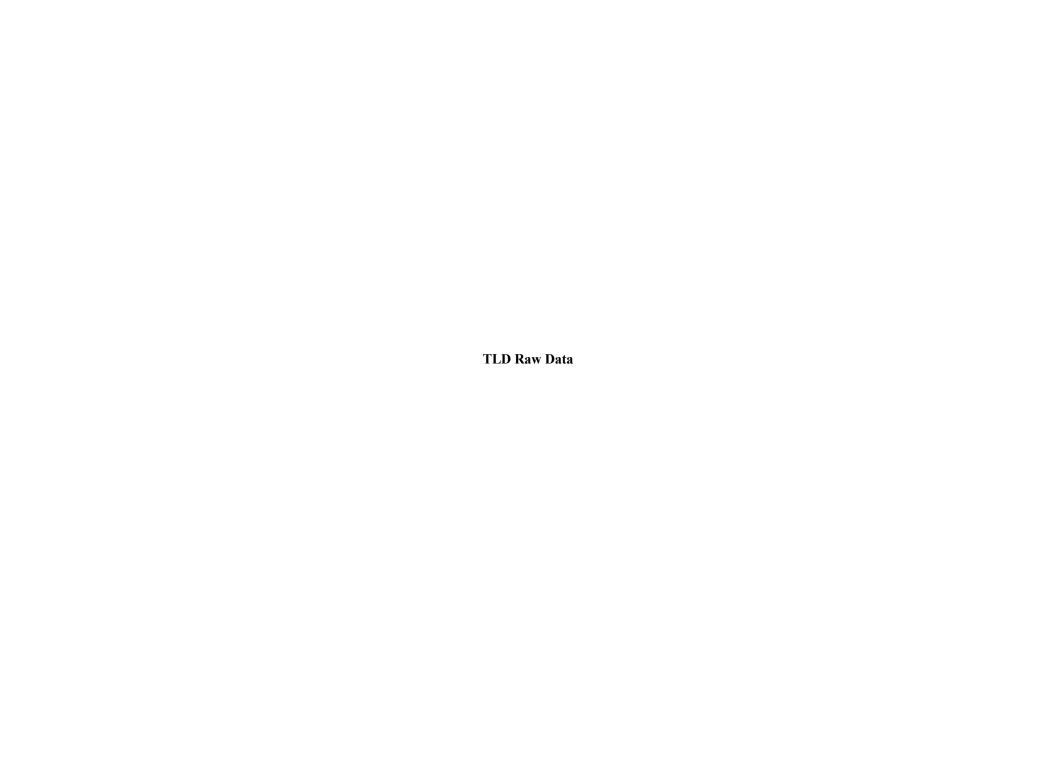
Mundy Die 11-15-13

APPENDIX G

Raw Data

This appendix contains the raw radiological results and chain of custody for the following media:

- TLD/OSLs,
- breathing zone samples,
- · air samples,
- soils samples for survey units and
- soil samples for borrow materials



SENNES CONSULTANTS ATTN AMY GARVA 121 GRANTON DR, UNIT 12 RICHMOND HILL, ON L4B 3N4 Canada

Received Date / Reported Date	2012-11-08 / 2013-01-07
Page	2 of 2
Analytical Work Order / QC Release	1231211198 / NHE
Copy / Version	0/2

Landauer, Inc., 2 Science Road Glenwood. Illinois 60425-1586 www.landauer.com Telephone: (708) 755-7000 Facsimile: (708) 755-7016 Customer Service: (800) 323-8830 Technical: (800) 438-3241



Radiation Dosimetry Report

Account: 703534

Corrected

oant eer	Name 5		Type	Quality		Dose Equivalent (mSv) for Periods Shown Below DDE-Deep Dose Equivalent LDE-Lens Dose Equivalent SDE-Shallow Dose Equivalent									Date	Serial Number				
Number			Dosimeter	Use	Rad. T		Perio	d Shown	Below	Qu	arter to D	ate	Y	ear to Da	ite -	Li	fetime to D	ate	Inception	Ž je
4	ID Number	Birth Date	1 -		8	Rad	DDE	LDE	SDE	DDE	LDE	SDE	DDE	LDE	SDE	DDE	LDE	SDE	1 2	Se
For Mar	nitoring Period:			-		-	2012-1	0-01 to 20	12-10-31		UARTER	4		2012			LIFETIME			
William !	A STATE OF THE STA		Pa	CHEST NOTE			M CALCUL/	M	М										2012/10	7251906A
1200	STATE OF THE PARTY	-	P5	CHEST NOTE			M GALCUL/		М										2012/10	7251907A
	entranta d	•	Pa	CHEST				M	M										2012/10	7251908A
07-2		•	Pa	CHEST	T		M CALCULA	CCC	M										2012/10	7251909A
	DATE OF THE	3	Pa	CHEST NOTE				М	М										2012/10	7251910A
	USA PARE		Pa	CHEST				М	М										2012/10	7251911A
			Ps	CHEST				М	М										2012/10	7251912A
-	20年の日本		Pa	CHEST	1			M	M										2012/10	7251913A
-	A STATE OF THE PARTY OF THE PAR		Pa	CHEST			M CALCUL	M	M										2012/10	7251914A
	OVASH NOT A		Pa	CHEST	1		7.	М	М										2012/10	72519154
	A TANKA WALLEY		Pa	CHEST				M	М										2012/10	7251916A

This report must not be used to claim product cartification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. SENNES CONSULTANTS ATTN AMY GARVA 121 GRANTON DR, UNIT 12 RICHMOND HILL, ON L4B 3N4 Canada

2012-11-08 / 2013-01-07
1 of 2
1231211198 / NHE
0/2

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Landauer, Inc., 2 Science Road Glenwood, Illinois 60425-1586 www.landauer.com Telephone: (708) 755-7000 Facsimile: (708) 755-7016 Customer Service: (800) 323-8830 Technical: (800) 438-3241

Radiation Dosimetry Report

Account: 703534

Corrected

parit	Nar	me	eter		. Type Quality			DDE-De	eep Dose (Periods 8 Equivalen			se Equival	lent		Date	Serial Numbor
Participant Number			Dosimeter	Use	Rad. 1	ğ [Perio	d Showr	Below	Qu	arter to D	ate	Ye	ear to Da	ite	Li	fetime to Da	ate	Inception	ie N
Д.	ID Number	Birth Date	1 0	T 23	Rad.	DDE	LDE	SDE	DDE	LDE	SDE	DDE	LDE	SDE	DDE	LDE	SDE	<u>s</u>	Š	
ForMo	onitoring Period:					\neg	2012-1	0-01 to 20	012-10-31		QUARTER	4		2012			LIFETIME			
00000	CONTROL		Pa	CNTRL		\neg										17.00				7251893A
00063	350180-203		Pa	CHEST			Unused												2012/09	7251894A
00067	350180-203		Pa	CHEST			Unused												2012/09	7251898A
00068	350180-203		Pa	CHEST		1	Unused												2012/09	7251800A
00069	350180-203		Pa	CHEST		\exists													2012/09	7251900A
00074	350180-203		Pa	CHEST			Unused									3.5		I	2012/09	7251905A
			Pa	CHEST		_		M	M										2012/10	725 189 5A
	Harris Sangara		Pa	CHEST NOTE		- 1	M CALCUL	M	M										2012/10	7251896A
	ROW TO BE MAN	P	Pa	CHEST			M CALCUL	M	M										2012/10	7251897A
Miles III			Pa	CHEST			M CALCUL	M	М										2012/10	7251901A
	AND DESCRIPTION OF THE PERSON NAMED IN		Pa	CHEST				M	M										2012/10	7251902A
	Will have		Pa	CHEST				M	М										2012/13	7251903A
	SERVICE SERVICE		Pa	CHEST NOTE			M CALCUL	М	M										2012/10	7251904A

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Radiation Dosimetry Report

Annual Registion Separate Limits (mrem);

Whate body, blood forming organs, gorade	5,000
Lens of Bys	15,800
Extremities and Skin	59,800
Felal (Gestation period)	500
General Public	100

Based on the US NRC Regulations, Title 10, Part 20, Code of Federal Regulations and adopted by many states, Certain state and other regulatory agencies may adhere to different limits.

Control Dosignator: A control des meter is included with each shipmont of dosimeters

Colump Designature: A costor con return is entired with each suppress of designative for manifolding entireliation requires the received design lateral. All the customer's healthy, store the control in a radiation five area during the wear period. Mainted Cope Equiral ent Reported: Does equivalently below the minimum measurable quartity for the current manifolding period ere recorded on "M." The minimal reporting leads your by the desirated high entire could be provided to a suppression of the shifted date organization opening the exposures less than 10 main report as "SL". [excludes fetal documeters], and/or exposures at a more than 10 mem begin reporting at 10 mem and report in increments of 10 mem.

Dosimeter Type	M (DDE,LDE,SDE	N (SDE Only)	SL (DDE,LDE SDE)
Luesi+ ^Q	1	- 7	10
intight	5	- 5	10
While Body Bata		14	10
Ming		30	
Neutral Neutron First	20		
Neutral Neutron Thermal Fas:	10	-	

Special Culturations: Special dote existintions can be applied to radiation workers who near lead agrans.

EDE 1 - two dosimeters one worn at the waist level under lead agron and one worn at

the soler level outside lead apren. 1.5 (Naint DOE) + 0.04 (Colin: DDE) = Assigned Deep Dase Equivalent

EDE 2 - one dosineter: one were at the collar level suitate lead aprox, 0.3 (Collar DDE) w Assigned Deep Dose Squivalent.

ODE # Acognist Deep Date Equivalent.
EDE 122 - ese desirretor: one worn at the collar level outside lead aprox. Ca8a/ DDE /5.6 = Nacignet Ceep Date Equivalent. Gale3 - Lens of Bye desimeter, Q.5 (Lens of Bye LDII) = Assigned Lens of Bye Dose

Equivalent. Lans (175 - Lens of Eye doalmeter, 6.179 (Lens of Eye LDE) = Assigned Lans of Eye

Jose Equivelent The "ASSIGNED" inc tollows all of the visited whole body desirated described the IEDE 1 or IEDE 2 calculation results or Landauer's standard Desc Assessment Protecti(deep and shallow whole body dess from the highest reading whole body obsincter, lens dose from decimeter desect to the eye).

Ring Continuetes Readings Ring doctraster readings report as a challow dose.

Fetal Des inveter: A destared programt werker will possess a tetal exposure en anextenpege of the report Nessel upon the whole beily doctmeter worn desest to the fetus. The fetus case is reported for the sevent wear gotted, plus the estimated doct from conception to declaration (Eprovided by customer), and the total dose from declaration

Use	Description	Ues	Description
AREA	Area Menitor	DEXTRM	Other Extremity
CHEST	Chest	OWHEDY	Other Whole Book
CNTRL	Control	RANKLE	Right Ankle
COLLAR	Coller	RFINGR	Right Hand Ring
EYE	Eye	RUARM	Right Upper Arm
PETAL	Felal	RULEO	Right Upper Lag
LANKLE	Left Ankle	RIARIST	Right Wist
LFINGR	Loft Hand Ring	SPECL	Special Purpose
LUARM	Left Upper Arm	UPBACK	Upper Back
LULEG	Left Upper Leg	WAIST	Weist
LWBACK	Lower Back	WHBODY	Whale Body
LWRIST	Left Wrist		1

Code	Radiation Quality Description (Type and/or Energy)
	beta
BH	beta high energy, e.g. Strondum, Phosphorus
81.	beta low energy e.g. Thallium, Krypton
BS	Strontium bets
вт	Thelium bete
BU	Uranium beta
BN	bela, neutron esisture
Nº	neuron fast
NT	neutron thermal
P	photon (x or pamma ray)
PB	photon, beta mixture
PEN	photon, bets, neutron mixture.
PH	photon high energy greater than 200 keV
PL.	photon low energy less than 40 keV
PM	photon medium energy 40 keV to 200 keV
PN	photon, neutron mixture

First Line Explanation

Participant Number: Unique number assigned by Landauer. Name: Perticipant to whom the dosimeter is assigned.

Dosimeter: Bedge true according to radiation maniforing needs.

			Type of Ra	ediation !	denitar e	d
Desirenter	Code	Ph.	otons		144	atrons
		×	Gemma	Deta	Fast	Fast/ Thermo
InLight Basis	B1P	Yes	Yes	Yes		
InLight Basis	BAP	Yes	Yes	Yes		
InLight Basis	B2C	Yes	Yes	Yes		
InLight Basis	84C	Yes	Yes	Yes		
InLight LDR	L2P	Yes	Yes	Yes		
InLight LOR	F31	Yes	Yes	Yes		
InLight LDR	LZT	Yes	Yes	Yes		Yes
InLight LDR	L2D	Yes	Yes	Yes	Yes	Yes
InLight LDR	L4P	Yes	Yes	Yes		
Luxel+	Pa	Yes	Yes	Yes		
Luxel+	Jn	Yes	Yes	Yes	Yes	
Lionit	Ta	Yes	Yes	Yes		Yes
Lasely Esport	P4	Yes	Yes			
Neutrak	N				Yes	
Neutrak	E			3		Yes
Ring, Single TLD	U	Yes	Yes	Yes		

Doep, Bye and Shallow Done Equivalents: Deep closs equivalent (DCE) applies to external while body exposure at a tissue depth of 1 cm (1000 raption²). By done equivalent (LDE) applies to enternal exposure of the lost at a tissue depth of 0.3

on: (300 mg/cm²). Shallow since equivalent (SDE) applies to the external secours of the exist or extremity at a tissue depth of 8.307 cm (7 mg/cm²) averaged over an area 1 cm²

Deep, aye and shellow doos equivalents report for the time frame indicated by "For Mostering Portor." These doses represent the dose resolved only far the occurrity becomen specified, individual radiation component results and combined totals report in segments times.

Quarterly gooursulated results reflect total dase received within a calendar 3-months time Quality's goournated results refect tool date record with a coentral a-months to theme and the outstainer defined stant day. (Note: Quarletin exocumulated outstains are eliminated for bleominity service or display. "Not applicable.") Year to date accumulation totals date received from the beginning of the current year to report date. Lifetime accumulation totals all dates received them inception date of desimeter services to report. date, and could include earlier dose history if supplied by customer. Reported quarterly, annual and lifetime dose accumulations represent the doses totaling from all accountivebaccount dosimaters to be reported at the customer level.

Inception Date: The date Landauer began keeping dosimeter records for a given dosimeter for a badging participant on the current sustamer.

Serial Number: Docimeter serial number.

Second Line Explanation
Participants personal information consisting of ID number and birth date. This information
can be suppressed on "Supikate and Original Reports" for privacy and/or posting needs.

Notes: Text messages explaining any sonormalities or comments. The notes with message appears on a separate time below all documents responsive information.

U.S. Patents 6,316,702; 6,127,685; 5,892,234



Helena, MT 877-472-0711 = Billings, MT 809-735-4489 = Casper, WY 888-235-0515 Gilletta, WY 866-686-7175 = Rapid City, SD 888-672-1225 = Collage Station, TX 888-690-2218

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: SENES Consultants Limited

Project: 350180-203 (200) Church Rock, Phase II

Lab ID: C12100693-001 **Client Sample ID:** CR-BZ-014

Report Date: 11/29/12

Collection Date: 10/09/12 16:56

DateReceived: 10/16/12

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter		0.0003		SW6020	11/19/12 21:40 / cp
Uranium, Activity	ND	pCi/Filter		0.2		SW6020	11/19/12 21:40 / cp
RADIONUCLIDES							
Radium 226	-0.4	pCi/Filter	U			E903.0	11/27/12 01:41 / trs
Radium 226 precision (±)	0.2	pCi/Filter				E903.0	11/27/12 01:41 / trs
Radium 226 MDC	0.4	pCi/Filter				E903.0	11/27/12 01:41 / trs

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: SENES Consultants Limited

 Project:
 350180-203 (200) Church Rock, Phase II

 Lab ID:
 C12100693-002

Lab ID: C12100693-Client Sample ID: CR-BZ-015 Report Date: 11/29/12
Collection Date: 10/11/12 16:40
DateReceived: 10/16/12

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter		0.0003		SW6020	11/19/12 21:46 / cp
Uranium, Activity	ND	pCi/Filter		0.2		SW6020	11/19/12 21:46 / cp
RADIONUCLIDES							
Radium 226	-0.3	pCi/Filter	U			E903.0	11/27/12 01:41 / trs
Radium 226 precision (±)	0.2	pCi/Filter				E903.0	11/27/12 01:41 / trs
Radium 226 MDC	0.4	pCi/Filter				E903.0	11/27/12 01:41 / trs

Holena, MT 877-472-0711 * Billings, MT 800-735-4489 * Casper, WY 888-235-0515 Gillette, WY 866-686-7175 = Rapid City, SD 888-672-1225 = College Station, TX 868-690-2218

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

SENES Consultants Limited Client:

350180-203 (200) Church Rock, Phase II Collection Date: 10/13/12 16:49 Project: C12100693-003

Lab ID: Client Sample ID: CR-BZ-016 DateReceived: 10/16/12

Matrix: Filter

Report Date: 11/29/12

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter	1	0.0003		SW6020	11/19/12 21:49 / cp
Uranium, Activity	ND	pCi/Filter		0.2		SW6020	11/19/12 21:49 / cp
RADIONUCLIDES							
Radium 226	-0.4	pCi/Filter	U			E903.0	11/27/12 01:41 / trs
Radium 226 precision (±)	0.2	pCi/Filter				E903.0	11/27/12 01:41 / trs
Radium 226 MDC	0.4	pCi/Filter				E903.0	11/27/12 01:41 / trs

Helena, MT 877-472-0711 = Billings, MT 809-735-4489 = Casper, WY 888-235-0515 Gilletta, WY 866-686-7175 = Rapid City, SD 888-672-1225 = Collage Station, TX 888-690-2218

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: SENES Consultants Limited

Project: 350180-203 (200) Church Rock, Phase II

Lab ID: C12100897-001 **Client Sample ID:** CR-BZ-017

Report Date: 11/21/12

Collection Date: 10/15/12 16:30

DateReceived: 10/22/12

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter		0.0003		SW6020	10/26/12 16:17 / cp
Uranium, Activity	ND	pCi/Filter		0.2		SW6020	10/26/12 16:17 / cp
RADIONUCLIDES							
Radium 226	-0.07	pCi/Filter	U			E903.0	11/20/12 03:21 / trs
Radium 226 precision (±)	0.2	pCi/Filter				E903.0	11/20/12 03:21 / trs
Radium 226 MDC	0.3	pCi/Filter				E903.0	11/20/12 03:21 / trs

Holena, MT 877-472-0711 * Billings, MT 800-735-4489 * Casper, WY 888-235-0515 Gillette, WY 866-686-7175 = Rapid City, SD 888-672-1225 = College Station, TX 868-690-2218

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

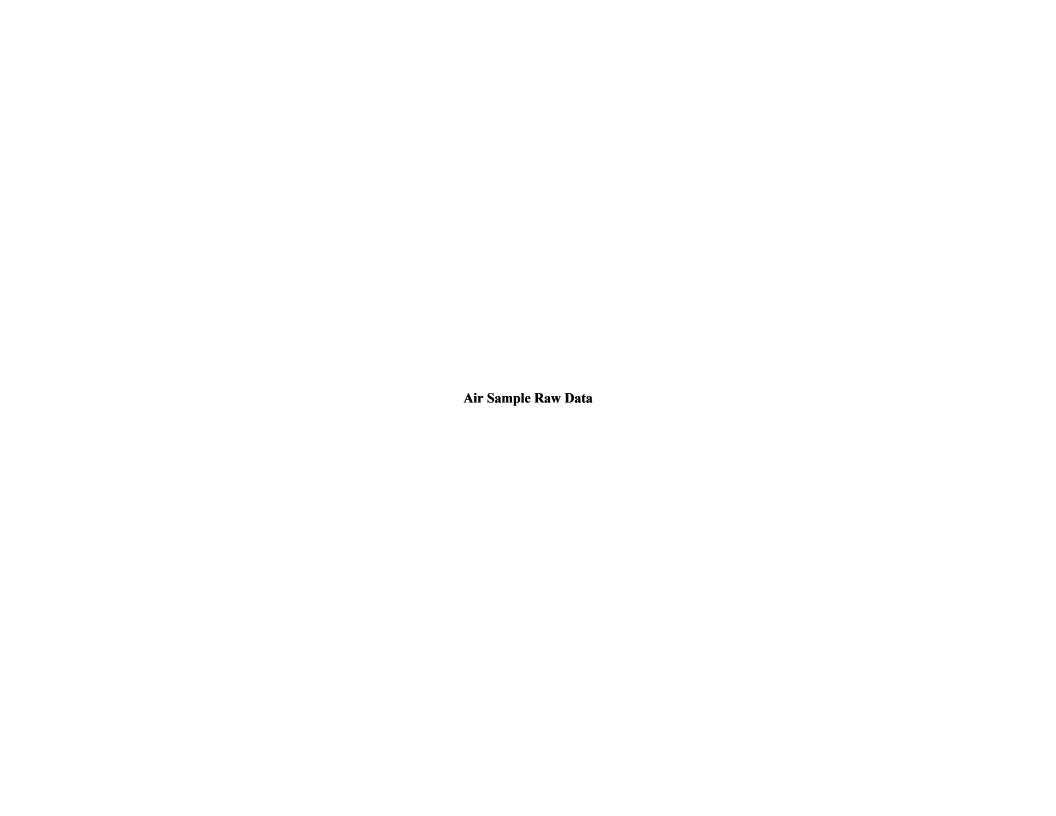
SENES Consultants Limited Client:

Report Date: 11/21/12 350180-203 (200) Church Rock, Phase II Collection Date: 10/15/12 17:38 Project: Lab ID: C12100897-002 DateReceived: 10/22/12

Client Sample ID: CR-BZ-018

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter		0.0003		SW6020	10/26/12 16:20 / cp
Uranium, Activity	ND	pCi/Filter		0.2		SW6020	10/26/12 16:20 / cp
RADIONUCLIDES							
Radium 226	-0.06	pCi/Filter	U			E903.0	11/20/12 03:21 / trs
Radium 226 precision (±)	0.2	pCi/Filter				E903.0	11/20/12 03:21 / trs
Radium 226 MDC	0.3	pCi/Filter				E903.0	11/20/12 03:21 / trs





Metals Case Narrative

SENES Consultants Limited

Church Rock Phase II – SENES 350180-203 (200)

Work Order Number: 1210222

- 1. This report consists of 12 filter samples.
- 2. The samples were received intact at ambient temperature by ALS on 10/16/12.
- 3. The samples were prepared as described on the Quality Assurance Summary Sheet included with this report.
- 4. The samples were analyzed based on SW-846, 3rd Edition procedures.

Analysis by ICP-MS followed method 6020A and the current revision of SOP 806.

- All standards and solutions are NIST traceable and were used within their recommended shelf life.
- 6. The samples were prepared and analyzed within the established hold times.

All in house quality control procedures were followed, as described below.

- 7. General quality control procedures.
 - A preparation (method) blank, laboratory control sample, and laboratory control sample duplicate were digested and analyzed with the samples in this digestion batch.
 - The preparation (method) blank associated with this digestion batch was below the reporting limit for the requested analyte.
 - All laboratory control sample criteria were met.
 - All initial and continuing calibration blanks were below the reporting limit for the requested analyte.
 - All initial and continuing calibration verifications were within the acceptance criteria for the requested analyte.



- The interference check samples associated with Method 6020A were analyzed.
- 8. Matrix specific quality control procedures.

Sample 1210222-12 was designated as the quality control sample for this analysis. Due to limited sample volume, matrix QC consisted of a post spike and serial dilution.

Similarity of matrix and therefore relevance of the QC results should not be automatically inferred for any sample other than the native sample selected for QC.

- A post spike was analyzed with this batch. All acceptance criteria for accuracy were met.
- A serial dilution was analyzed with this batch. All acceptance criteria were met.
- The samples were analyzed at a dilution in order to protect the ICP-MS from the high metal content of the samples.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Jill Late le

Inorganics Primary Data Reviewer

norganics Final Data Reviewer

10 (25 (12)



Inorganic Data Reporting Qualifiers

The following qualifiers are used by the laboratory when reporting results of inorganic analyses.

- Result qualifier -- If the analyte was analyzed for but not detected a "U" is entered.
- QC qualifier -- Specified entries and their meanings are as follows:
 - E The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
 - M Duplicate injection precision was not met.
 - N Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
 - Z Spiked recovery not within control limits. An explanatory note may be included in the narrative
 - * Duplicate analysis (relative percent difference) not within control limits.
 - S SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1210222

Client Name: SENES Consultants Limited Client Project Name: Church Rock Phase II Client Project Number: SENES 350180-203 (200) Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
RWPR-AS-065	1210222-1		FILTER	06-Oct-12	13:30
RWPR-AS-066	1210222-2		FILTER	08-Oct-12	16:52
RWPR-AS-067	1210222-3		FILTER	09-Oct-12	16:46
RWPR-AS-068	1210222-4		FILTER	10-Oct-12	16:33
RWPR-AS-069	1210222-5		FILTER	11-Oct-12	16:30
RWPR-AS-070	1210222-6		FILTER	12-Oct-12	16:50
RWPR-AS-071	1210222-7		FILTER	13-Oct-12	17:34
RWPR-AS-072	1210222-8		FILTER	13-Oct-12	17:02
RWPR-AS-073	1210222-9		FILTER	13-Oct-12	17:17
RWPR-AS-074	1210222-10	_	FILTER	14-Oct-12	16:51
RWPR-AS-075	1210222-11		FILTER	14-Oct-12	16:22
RWPR-AS-076	1210222-12		FILTER	14-Oct-12	16:36

Page 1 of 1

ALS Laboratory Group
225 Commerce Drive, Fort Collins, Colorado 80524
TR. (800) 448-1511 PH. (870) 480-1517 FX. (870) 480-1522

Chain-of-Custody

ECC0101

									Olfor Hillo				
(ALS)		SAMPL	SAMPLER Darrell Liles	selj		_		DATE	10/15/2012	PAGE	1	of 2	
PROJECT NAME	PROJECT NAME Church Rock Phase ii	SITE	SITE ID Churchroek	oek		-	Ę	TURNAROUND	30 day	DISPOSAL	By Lab or	Return to Client	Slient
PROJECT No.	SENES 360180-203 (200)	EDD FORMAT	AT										
		PURCHASE ORDER Account Number 816126868	ER Account	Number 816126	858								
COMPANY NAME	SENES	BILL TO COMPANY SENES Consultants Limited	NY SENES	Sonsultants Lim	fted								
SEND REPORT TO	Darrell Liles	INVOICE ATTN TO Andrea Pegg	TO Andrea	D.Da.									
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDRE	SS 121 Gra	ADDRESS 121 Granton Dr., Unit #12	~	<u> </u>							
CITY / STATE / ZIP	Englewood, CO 80112	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	IP Richmon	rc HIII, ON L4B	3N4	Ι				-,			
PHONE	PHONE (303) 521-1408	ОНА	PHONE (905) 764-9380	0986-1		 							
FAX		ti.	FAX (905) 764-9386	1-9386		Γ							
E-MAIL	dilles@senesusa.com	E-M	E-MAIL apegg@senes.ca	Bsenes ca					. "				
Cl de J	Field ID	Matrix	Sample	Sample	* Sample Pres.	 ပ္မ							
					•	Ra-226	stoT-U		Run Time (min)	Total Flow (ft^3)	Comments	str.	
9	RWPR-AS-065	н	10/6/2012	1330	1	×	×		332	13,612			
①	RWPR-AS-066	F 1	10/8/2012	1652	1	× =	×		543	22,263			
<u>_</u>	RWPR-AS-067	7	10/9/2012	1646	1	 ×	×		554	22,160			
(3)	RWPR-AS-068	F 10	10/10/2012	1633	1	×	×		428	17,548			
8	RWPR-AS-069	F 10	10/11/2012	1630	1		×		530	21,730			
3	RWPR-AS-070	т Б	10/12/2012	1650	1	 - 1	×		501	20,040			
©	RWPR-AS-071	F 10	10/13/2012	1734	1	_	×		009	24,000			
(2)	RWPR-AS-072	F 1(10/13/2012	1702	-	=	×		542	21,1,38			
6	RWPR-AS-073	T.	10/13/2012	1717	-	=	×		539	22,099			
٩	RWPR-AS-074	7	10/1/4/2012	1651	-	_	×		535	21,400			

Air samples - inlet flow side is folded inward and marked with X	t flow sic	de is fold	ed inward	and mar	ked with X		×	X LEVEL II (Standard Q2)	dard QC)
						L	Ī	LEVEL III (Std QC + forms)	QC + forms)
						<u> </u>		LEVEL IV (Sid	LEVEL IV (Std QC + f1ms + raw deta)
Preservative Key: 1-HCI 2-HNO3 3-H2SO4 4-NeOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035	1-HCI	2-HN03	3-H2SO4	4-NaOH	5-NaHSO4	7-Other	8-4 d	egrees C	9-503€

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	6 San Me Lla	Darrell Lites	10/16/2012	28h
RECEIVED BY	C. Sumble	C Tr 1 mb12	2E01 K1-91-01	1025
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
X8.03/13/13/13/13/13/13/13/13/13/13/13/13/13				

ALS	•	~ ⊢
~	4	ار ک

225 Commerce Drive, Fort Collins, Colorado 80524 FF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

ALS Laboratory Group

Chain-of-Custody

WORKORDER (2/0222

	7701-084 (074) :YL [101-084 (074) :LL [101-044 (000) :L]	1022							Form 202r8	02r8			
(ALS)		SAMPLE	SAMPLER Darrell Lies					٥	DATE 10/15/2012	PAGE	7	ō	2
PROJECT NAME	PROJECT NAME Church Rock Phase II	SITE	SITE ID Churchrock					TURNAROUND	JND 30 day	DISPOSAL	By Lab	or Return	Return to Client
PROJECT No.	PROJECT No. SENES 360180-203 (200)	EDD FORMAT	11							-			
		PURCHASE ORDER Account Number 816126858	R Account Nun	1ber 8161268	82								
COMPANY NAME	SENES	BILL TO COMPANY SENES Consultants Limited	Y SENES CON	ultants Limit	pe.								
SEND REPORT TO	Darrell Liles	INVOICE ATTN	INVOICE ATTN TO Andrea Pegg										
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDRE	ADDRESS 121 Grarton Dr., Unit #12	Dr., Unit #12						-			
CITY / STATE / ZIP	Englewood, CO 80112	CITY / STATE / Z	CITY / STATE / ZIP RICHMOND HIII, ON L4B 3N4	II, ON L4B 3	*								
PHONE	PHONE (303) 521-1406	PHONE	(906) 764-9380	Q									
FAX		14	FAX (905) 764-9386	99									
E-MAIL	diles@senesusa.com	E-M	E-MAIL apegg@senes.ca	nes.ca									
de.	G) pieds	Matrix	Sample	Sample	e edman	88 O							
					•		9ZZ-8A	lsboT-U	Run Time (min)	Total Flow (ft^3)	Comments	nents	
9	RWPR-AS-075	F 1	10/14/2012	1622	1	=	×	×	535	21,400			
<u>(T</u>	RWPR-AS-076	F 10	10/14/2012	1636	-	=	×	×	537	22,017			
					-	-	×	×					
					-	=	×	×					
					-	=	×	×					
					-	=	×	×					
					-	-	×	×					
					-	=	×	×					
					-	=	×	×					
					-	=	×	×					
"Time Zone (Circle):	*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = s	Matrix; O = oil S = soil NS = non-soil solid W ⇒ water L = ∜quid E = extract F = filter	W ≈ water L =	quid E=ext	rect F = 1	重							
							L			And the second second	_	_	-

QC PACKAGE (check below)

X LEVEL II (Sundard 3C)

LEVEL III (Std QC +forms)

TEVEL IV (SIG QC +forms) 1-HCI 2-HNO3 3-H28O4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035 Time Zone (Circle): EST CST MST PST Matrix: O=oil S=soil N
For metals or anions, please detall analytes below.

Comments:

Air samples - inlet flow side is folded inward and marked with X

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	RELINQUISHED BY COME LAND	Darrell Liles	10/18/2012 1432	2 <i>£\th</i>
RECEIVED BY	C Sumble	CTr imble	5601 -11-11-01	5491
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

	Client: SENES Workorder No: 1210	223	<u> </u>	_
	Project Manager: JK Initials: CDT	Date:	10-16	-12
1.	Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2.	Are custody seals on shipping containers intact?	NONE	YES	NO
3.	Are Custody seals on sample containers intact?	NONE	YES	NO
4.	Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
5.	Are the COC and bottle labels complete and legible?		(YES)	NO
6.	Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	NO
7.	Were airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
8.	Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
9.	Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
10.	Is there sufficient sample for the requested analyses?		(YES)	NO
11.	Were all samples placed in the proper containers for the requested analyses?		(YES)	NO
12.	Are all samples within holding times for the requested analyses?		YES	NO
13.	Were all sample containers received intact? (not broken or leaking, etc.)		(YES)	NO
14.	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea > green pea	N/A)	YES	NO
15.	Do any water samples contain sediment? Amount	(N/A)	YES	NO
14	Amount of sediment:dustingmoderateheavy		YES	(NO)
	0.160000	(RAD)	YES	(NO)
1 /.	Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	ONLY	IES	CNO
	Cooler#:			
	Temperature (°C): Hmb			
1	No. of custody seals on cooler: ()			
	Acceptance External μR/hr reading:			
	Background µR/hr reading: 10			
	Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? (YES)/NO/NA (If no. see F			•
Αŧ	dditional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXC	EPT#1 AN	D#16.	
_				
			_	
If a	applicable, was the client contacted? YES / NO / (NA) Contact:	Date/Tim	ie:	
Pr	roject Manager Signature / Date:			
	/ W			

Form 201r24.xls (06/04/2012)

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002 moz.29U is gniqqid2 fəməinl 29U diw bəbəən ion msol zid?

Total Recoverable URANIUM

Method SW6020 Revision A

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: SENES Consultants Limited

Client Project ID: Church Rock Phase II SENES 350180-203 (200)

Work Order Number: 1210222 Final Volume: 100 ml
Reporting Basis: As Received Matrix: FILTER
Prep Method: SW3050B Result Units: UG/sample

Analyst: Ross Miller

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
RWPR-AS-065	1210222-1	10/06/2012	10/18/2012	10/18/2012	N/A	50	0.56	0.05		1 sample
RWPR-AS-066	1210222-2	10/08/2012	10/18/2012	10/18/2012	N/A	50	0.45	0.05		1 sample
RWPR-AS-067	1210222-3	10/09/2012	10/18/2012	10/18/2012	N/A	50	0.95	0.05		1 sample
RWPR-AS-068	1210222-4	10/10/2012	10/18/2012	10/18/2012	N/A	50	1.3	0.05		1 sample
RWPR-AS-069	1210222-5	10/11/2012	10/18/2012	10/18/2012	N/A	50	1.4	0.05		1 sample
RWPR-AS-070	1210222-6	10/12/2012	10/18/2012	10/18/2012	N/A	50	0.38	0.05		1 sample
RWPR-AS-071	1210222-7	10/13/2012	10/18/2012	10/18/2012	N/A	50	1.7	0.05		1 sample
RWPR-AS-072	1210222-8	10/13/2012	10/18/2012	10/18/2012	N/A	50	0.48	0.05		1 sample
RWPR-AS-073	1210222-9	10/13/2012	10/18/2012	10/18/2012	N/A	50	0.62	0.05		1 sample
RWPR-AS-074	1210222-10	10/14/2012	10/18/2012	10/18/2012	N/A	50	1.9	0.05		1 sample
RWPR-AS-075	1210222-11	10/14/2012	10/18/2012	10/18/2012	N/A	50	0.48	0.05		1 sample
RWPR-AS-076	1210222-12	10/14/2012	10/18/2012	10/18/2012	N/A	50	0.44	0.05		1 sample

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: im1210222-1

Date Printed: Wednesday, October 24, 2012 ALS Environmental -- FC

LIMS Version: 6.618

Page 1 of 1

ICPMS Metals

Method SW6020A Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: IP121018-21MB

Sample Matrix: FILTER % Moisture: N/A Date Collected: N/A Date Extracted: 18-Oct-12

Date Analyzed: 18-Oct-12

Run ID: IM121018-11A1 Cleanup: NONE Basis: N/A Prep Method: SW3050 Rev B File Name: 081SMPL_

Prep Batch: IP121018-21

QCBatchID: IP121018-21-1

Sample Aliquot: 1 sample Final Volume: 100 ml Result Units: UG/sample Clean DF:

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-61-1	URANIUM	50	0.05	0.05	U	

Data Package ID: im1210222-1

ICPMS Metals

Method SW6020A

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: IP121018-21LCS

Sample Matrix: FILTER
% Moisture: N/A
Date Collected: N/A

Date Collected: N/A

Date Extracted: 10/18/2012

Date Analyzed: 10/18/2012

Prep Method: SW3050B

Prep Batch: IP121018-21 QCBatchID: IP121018-21-1

Run ID: IM121018-11A1 Cleanup: NONE Basis: N/A File Name: 082SMPL Sample Aliquot: 1 sample Final Volume: 100 ml Result Units: UG/sample Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-61-1	URANIUM	10	9.27	0.05		93	80 - 120%

Lab ID: IP121018-21LCSD

Sample Matrix: FILTER % Moisture: N/A

Date Collected: N/A
Date Extracted: 10/18/2012
Date Analyzed: 10/18/2012
Prep Method: SW3050B

Prep Batch: IP121018-21 QCBatchID: IP121018-21-1 Run ID: IM121018-11A1

Run ID: IM121018-1 Cleanup: NONE Basis: N/A File Name: 083SMPL_ Sample Aliquot: 1 sample Final Volume: 100 ml Result Units: UG/sample

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
7440-61-1	URANIUM	10	9.3	0.05		93	20	0

Data Package ID: im1210222-1

ICPMS Metals

Method SW6020

Analytical Spike Sample Recovery

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-076 **LabID:** 1210222-12A

Run ID: IM121018-11A1

Date Analyzed: 18-Oct-12

Result Units: ug/l

Target Analyte	Sample Result	Samp Qual	PS Result	PS Qual	Spike Added	PS % Rec.	Control Limits
URANIUM	0.0890		2.02		2	97	75 - 125%

Data Package ID: im1210222-1

Date Printed: Wednesday, October 24, 2012

12 of 14

QUALITY ASSURANCE SUMMARY SHEET
ALS W.O.#/BATCH /Z/OZZZ
TEST RAZZG Mefale METHOD PAY
METHOD PRU
SOP/REV (PREP)
SOP/REV (ANAL)
Briefly document any QA or other problems or deviations associated with the analysis of samples. Problems could result from: log-in, color, odor, dilution, consistency, scheduling, equipment, or instrumentation, or may include documentation of minor deviations necessary due to unique DQQ's or sample characteristics.
Samples in work order 1210222 consisted of large glass fiber filters to be analyzed for Ra226 and Metals. The samples were placed into plastic cups and digested by adding 50 mL nitric acid, and 50 mL hydrochloric acid. At this time a MB was created. After drying the digestions on the hotblock, 10 ml nitric acid and ~90 ml DI water were added. The samples were filtered through fluted qualitative filter paper and brought to a volume of 100 mL with DI water. Samples were then split for appropriate tests.
The digestate is a common solution for multiple analyses. Tracing and spiking was performed after the appropriate aliquot was taken from the common digestate for the analysis of Ra-226 and Metals. This reduces the potential for interferences caused by the different matrices used in the tracing and spiking solutions.
Per project manager, aliquots were taken as listed below. Metals 10 ml or .1 sample equivalent Ra226 90 ml or .9 sample equivalent
The following equation was used to calculate the filter equivalent:
Sample Equivalent (x) = (Digestate volume taken for analysis) (Total volume of digestate)
01/3/12
82 10/18/2
TECHNICIAN/ANALYST MAL DATE 10/18/17
DEPARTMENT MANAGER DATE 10/18/12

1.

FORM 302r6.doc (4/22/04)

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Radium-226 Case Narrative

SENES Consultants Limited

Church Rock Phase II - SENES 350180-203 (200)

Work Order Number: 1210222

- This report consists of the analytical results for 12 composite filter samples received by ALS on 10/16/2012.
- These samples were prepared and analyzed according to the current revisions of SOP 783, with procedure modifications outlined on QASS #422646. The analyses were completed on 10/26/2012.
- The analysis results for these samples are reported on an 'As Received' basis in units of pCi/sample.
- 4. Sample volume was insufficient to allow preparation of a duplicate. A laboratory control sample duplicate (LCSD) was prepared in lieu of a client sample duplicate.
- 5. No anomalous situations were encountered during the preparation or analysis of these samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Linda Arend Radiockemistry Primary Date Reviewer

Radiochemistry Final Data Reviewer

Date

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1210222

Client Name: SENES Consultants Limited
Client Project Name: Church Rock Phase II
Client Project Number: SENES 350180-203 (200)
Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
RWPR-AS-065	1210222-1		FILTER	06-Oct-12	13:30
RWPR-AS-066	1210222-2		FILTER	08-Oct-12	16:52
RWPR-AS-067	1210222-3		FILTER	09-Oct-12	16:46
RWPR-AS-068	1210222-4		FILTER	10-Oct-12	16:33
RWPR-AS-069	1210222-5		FILTER	11-Oct-12	16:30
RWPR-AS-070	1210222-6		FILTER	12-Oct-12	16:50
RWPR-AS-071	1210222-7		FILTER	13-Oct-12	17:34
RWPR-AS-072	1210222-8		FILTER	13-Oct-12	17:02
RWPR-AS-073	1210222-9		FILTER	13-Oct-12	17:17
RWPR-AS-074	1210222-10		FILTER	14-Oct-12	16:51
RWPR-AS-075	1210222-11		FILTER	14-Oct-12	16:22
RWPR-AS-076	1210222-12		FILTER	14-Oct-12	16:36

Date Printed: Saturday, October 27, 2012

N	
1	

ALS Laboratory Group 225 Commerce Dive, Fort Collins, Colorado 80524 TR. (800) 445-1511 PH. (870) 480-1511 FX. (870) 480-1522

Chain-of-Custody

WORKGRDER (2102)

3 of 23

	225 Commerce Drive, Fort Collins, Colorado, 80524 TF: (800) 443-1511 PH: (870) 490-1511 FX: (870) 490-1522	1522								Form 202r8	•	1 2 <u>1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 </u>	d d k	ε
(ALS)		SAMPL	SAMPLER Darrell Liles	Liles					DATE	10/15/2012	PAGE	1	of	7
PROJECT NAME	Church Rock Phase il	SITEID	ID Churchrock	roek				TUR	TURNAROUND	30 day	DISPOSAL	By Lab o	or Return to Client	Client
PROJECT No.	SENES 360180-203 (200)	EDD FORMAT	AT				_							
		PURCHASE ORDER Account Number 816126868	ER Accoun	it Number 81612	6868		Γ							
COMPANY NAME	SENES	BILL TO COMPANY		SENES Consultants Limited	nited		Γ-							
SEND REPORT TO	Darrell Liles	INVOICE ATTN TO Andrea Pegg	TO Andrea	Pegg										
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDRE	SS 121 Gra	ADDRESS 121 Granton Dr., Unit #12	12		· ·							
CITY / STATE / ZIP	Englewood, CO 80112	CITY / STATE /	ZIP Richmo	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	3N4		Γ							
PHONE	PHONE (303) 521-1408	H	PHONE (905) 764-9380	34-9380			T -							
FAX		<u>u</u>	FAX (905) 764-9386	34-9386										
E-MAIL	diles@senesusa.com	m Z	All, apegg	E-MAIL apegg@senes.ca			Г							
4	<u>.</u>	Matrix	Sample	Semple	****		٤							
2 2 5 1			Date				7 822-28	IstoT-U	Run (m	Run Time (min)	Total Flow (ft^3)	Comments	ents	
9	RWPR-AS-065	F	10/6/2012	1330	-		H ×	×	3	332	13,612			
①	RWPR-AS-066	F	10/8/2012	1652	1		× =	×	5	543	22,263			
@	RWPR-AS-067	F 1	10/9/2012	1646	-		× =	*	\$	554	22,160			
(RWPR-AS-068	F 1	10/10/2012	1633	1		×	×	4	428	17,548			
<u>(S</u>	RWPR-AS-069	F 1	10/11/2012	1630	1		X II	×	5	530	21,730			
9	RWPR-AS-070	F	10/12/2012	1650	1		×	×	5	501	20,040			
(RWPR-AS-071	F	10/13/2012	1734	1		×	×	9	009	24,000			
(2)	RWPR-AS-072	F	10/13/2012	1702	-		× =	×	5	542	21,1,38			
6	RWPR-AS-073	ΙŁ	10/13/2012	1717	-		× =	×	\$	539	22,099	-		
9	RWPR-AS-074	н 5	10/1/4/2012	1651	1		×	×	5	535	21,400			
"Time Zone (Circle):	"Time Zone (Gircle); EST CST MST PST Matrix: O=oll S=soil NS≖non-soil soild W=water L=liquid E=extract Fefiter	oll NS ≈ non-soll solic	W = water	Lallquid Eac	extract Fef	Iter	ı							

| C PACKAGE (check below) | X | LEVEL II (Standard Q2) | LEVEL III (St Preservative Key: 1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5036 For metals or anions, please detail analytes below.

Comments:

Alr samples - inlet flow side is folded inward and marked with X

•				
	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	Ban Worle	Darrell Lites	10/15/2012	28h
RECEIVED BY	C. Tumble	C Trimble	2E01 K1-91-91	1025
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

For metals or anions, please detail analytes below. Air samples - inlet flow side is folded inward and marked with X Comments: "Time Zone (Circle): EST CITY / STATE / ZIP Englewood, CO 80112 COMPANY NAME SENES SEND REPORT TO Darrell Liles ALS) PROJECT NAME Church Rock Phase II PROJECT No. SENES 350180-203 (200) E 8 Lab ID ADDRESS 8310 S. Valley Hwy., Suite 3014 E-MAIL PHONE (303) 521-1408 225 Commerce Drive, Fort Collins, Colorado 80524 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522 RWPR-AS-076 RWPR-AS-075 **ALS Laboratory Group** dliles@senesusa.com CST MST PST Field ID Matrix: O = oil S = 80| NS = non-soft solid W = water L = tiquid PURCHASE ORDER Account Number \$16128858 BILL TO COMPANY SENES Consultants Limited Matrix GTY / STATE / ZIP INVOICE ATTN TO Andrea Pegg m П EDD FORMAT QC PACKAGE (check below) SAMPLER Darrell Liles SITE ID Churchrock ADDRESS 121 Granton Dr., Unit #12 PHONE LEVEL II (Standard QC) LEVEL III (Std QC + forms) LEVEL IV (Std QC + forms + raw data) E-MAIL apegg@senes.ca 10/14/2012 10/14/2012 Sample Date FAX (908) 784-9386 (905) 764-9380 Richmond Hill, ON L4B 3N4 Sample Time 1636 1622 E = extract F = filter Sample Chain-of-Custody _ _ --_ RELINQUISHED BY RECIVED BY RELINQUISHED BY Pres. RECEIVED BY ရ = = = = = = = = = SIGNATURE M C Sumble × × × × Ra-226 DATE × × × U-Total Run Time (mln) 537 535 Form 202r8 10/15/2012 30 day Darrell Liles þ Trimble PRINTED NAME Fotal Flow (ft^3) WORKORDER 22,017 21,400 DISPOSAL PAGE By Lab 121027 10-16-12 10/16/2012 DATE ę Return to Client 1025 4 IME 4 of 23

Preservative Key:

Ω 1-HΩ

2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other

8-4 degrees C 9-5035



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: SENES Workorder No: 1	21077	}	
Project Manager: JK Initials: C	DT Date:	10-16	6-12
Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2. Are custody seals on shipping containers intact?	NONE	YES	NO
3. Are Custody seals on sample containers intact?	NONE	YES	NO
4 Is there a COC (Chain-of-Custody) present or other representative documents?	•	(YES)	NO
5. Are the COC and bottle labels complete and legible?		(YES)	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, containers, matrix, requested analyses, etc.)	no. of	YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
8 Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
9 Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
10 Is there sufficient sample for the requested analyses?		YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		(YES)	NO
12. Are all samples within holding times for the requested analyses?		(YES)	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		(YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea > green pea	(N/A)	YES	NO
15. Do any water samples contain sediment? Amount of sediment: dusting moderate heavy	ount N/A	YES	NO
16. Were the samples shipped on ice?		YES	(NO)
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2	#4 RAD ONLY	YES	(NO)
Cooler #:	ONLE		
Temperature (°C): Amb			-
No. of custody seals on cooler:			
OOT Survey/ Acceptance External µR/hr reading:			
Information Background µR/hr reading: 10			-
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? (YES)/NO/NA	(If no see Form 008.)		
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION AB		VD #16.	
The state of the s	O VE, ESTOER I WITH		
If applicable, was the client contacted? YES / NO / NA Contact:	Date/Tin	ne:	
Project Manager Signature / Date: / / / / / (3-16-12			
**IR Gun #2: Oakton, SN 29922500201-0066 Form 201r24.xls (06/04/2012) **IR Gun #4: Oakton, SN 2372220101-0002		_	ì

Page 1 of ___

PAI 783 Rev 10 Method Blank Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: RE121018-2MB

Sample Matrix: FILTER

Prep SOP: PAI 783 Rev 10

Date Collected: 18-Oct-12
Date Prepared: 18-Oct-12

Date Analyzed: 26-Oct-12

Prep Batch: RE121018-2

QCBatchID: RE121018-2-1 Run ID: RE121018-2A Count Time: 15 minutes Final Aliquot: 0.900 sample Result Units: pCi/sample File Name: Manual Entry

	CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
1	13982-63-3	Ra-226	0 +/- 0.13	0.07	1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: RE1210222-1

Date Printed: Saturday, October 27, 2012

ALS Environmental -- FC

Page 1 of 1

LIMS Version: 6.618

PAI 783 Rev 10

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: RE121018-2LCS

Sample Matrix: FILTER

Prep SOP: PAI 783 Rev 10

QCBatchID: RE121018-2-1 Run ID: RE121018-2A Final Aliquot: 0.900 sample Result Units: pCi/sample File Name: Manual Entry

Date Collected: 18-Oct-12 Date Prepared: 18-Oct-12

Count Time: 15 minutes

Prep Batch: RE121018-2

Date Analyzed: 26-Oct-12

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	48.8 +/- 9.0	0.2	50.00	97.5	57 - 126	Р

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Data Package ID: RE1210222-1

Abbreviations:

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

Page 1 of 2

PAI 783 Rev 10

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: RE121018-2LCSD

Sample Matrix: FILTER

Prep SOP: PAI 783 Rev 10

Date Collected: 18-Oct-12

Date Prepared: 18-Oct-12

Prep Batch: RE121018-2 QCBatchID: RE121018-2-1

Run ID: RE121018-2A Count Time: 15 minutes Final Aliquot: 0.900 sample Result Units: pCi/sample File Name: Manual Entry

Date Analyzed: 26-Oct-12

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	49.7 +/- 9.2	0.2	50.00	99.5	57 - 126	Р

Comments:

Qualifiers/Flags:

 $\ensuremath{\mathsf{U}}\xspace$ - Result is less than the sample specific MDC.

 $\ensuremath{\mathsf{LT}}$ - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Data Package ID: RE1210222-1

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

Page 2 of 2

PAI 783 Rev 10

Duplicate Sample Results (DER)

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: Lab ID: RE121018-2LCSD

Sample Matrix: FILTER Prep Batch: RE121018-2 Prep SOP: PAI 783 Rev 10 QCBatchID: RE121018-2-1 Date Collected: 18-Oct-12

Date Prepared: 18-Oct-12 Count Time: 15 minutes Date Analyzed: 26-Oct-12

Final Aliquot: 0.900 sample Prep Basis: As Received

Moisture(%): NA Result Units: pCi/sample File Name: Manual Entry

CASNO Analyte		Sample			Duplicate			DER	DER
	Allalyte	Result +/- 2 s TPU	MDC	Flags	Result +/- 2 s TPU	MDC	Flags		Lim
13982-63-3	Ra-226	48.8 +/- 9.0	0.2	Р	49.7 +/- 9.2	0.2	Р	0.0753	2.13

Run ID: RE121018-2A

Comments:

Duplicate Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13
- LT Result is less than Request MDC, greater than sample specific MDC
- M Requested MDC not met.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L LCS Recovery below lower control limit.
- H LCS Recovery above upper control limit.
- P LCS, Matrix Spike Recovery within control limits.
- N Matrix Spike Recovery outside control limits

Data Package ID: RE1210222-1

Date Printed: Saturday, October 27, 2012

Abbreviations:

TPU - Total Propagated Uncertainty

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-065

Lab ID: 1210222-1

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 06-Oct-12

Date Collected: 06-Oct-12

Date Prepared: 18-Oct-12

Date Analyzed: 26-Oct-12

Reference: 18-Oct-12

Prep Batch: RE121018-2 QCBatchID: RE121018-2-1 Run ID: RE121018-2A

Run ID: RE121018-2A
Count Time: 15 minutes
Report Basis: As Received
Moisture(%): NA
Result Units: pCi/sample
File Name: Manual Entry

Final Aliquot: 0.900 sample

Prep Basis: As Received

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.08 +/- 0.21	0.39	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210222-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-066

Lab ID: 1210222-2

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10

Date Collected: 08-Oct-12

Date Collected: 08-Oct-12
Date Prepared: 18-Oct-12
Date Analyzed: 26-Oct-12

Prep Batch: RE121018-2 QCBatchID: RE121018-2-1 Run ID: RE121018-2A

Run ID: RE121018-2A Count Time: 15 minutes Report Basis: As Received Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.03 +/- 0.23	0.45	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210222-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-067

Lab ID: 1210222-3

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 09-Oct-12

Date Prepared: 18-Oct-12

Date Analyzed: 26-Oct-12

Prep Batch: RE121018-2 QCBatchID: RE121018-2-1 Run ID: RE121018-2A

Count Time: 15 minutes
Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.09 +/- 0.25	0.45	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210222-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-068

Lab ID: 1210222-4

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 10-Oct-12

Date Prepared: 18-Oct-12

Date Analyzed: 26-Oct-12

Prep Batch: RE121018-2 QCBatchID: RE121018-2-1 Run ID: RE121018-2A

Count Time: 15 minutes
Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.48 +/- 0.29	0.34	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210222-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-069

Lab ID: 1210222-5

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 11-Oct-12

Date Prepared: 18-Oct-12

Date Analyzed: 26-Oct-12

Re

Prep Batch: RE121018-2 QCBatchID: RE121018-2-1 Run ID: RE121018-2A

Count Time: 15 minutes
Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.21 +/- 0.25	0.40	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210222-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-070 Lab ID: 1210222-6 Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 12-Oct-12

Date Collected: 12-Oct-12
Date Prepared: 18-Oct-12
Date Analyzed: 26-Oct-12

Prep Batch: RE121018-2 QCBatchID: RE121018-2-1 Run ID: RE121018-2A

Run ID: RE121018-2A Count Time: 15 minutes Report Basis: As Received Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.13 +/- 0.20	0.33	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210222-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-071

Lab ID: 1210222-7

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 13-Oct-12

Date Collected: 13-Oct-12
Date Prepared: 18-Oct-12
Date Analyzed: 26-Oct-12

Prep Batch: RE121018-2 QCBatchID: RE121018-2-1 Run ID: RE121018-2A

Run ID: RE121018-2A Count Time: 15 minutes Report Basis: As Received Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.66 +/- 0.32	0.27	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210222-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-072 Lab ID: 1210222-8 Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 13-Oct-12

Date Collected: 13-Oct-12
Date Prepared: 18-Oct-12
Date Analyzed: 26-Oct-12

Prep Batch: RE121018-2 QCBatchID: RE121018-2-1 Run ID: RE121018-2A

Count Time: 15 minutes
Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.24 +/- 0.19	0.24	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.
- M The requested MDC was not me

Abbreviation:

- TPU Total Propagated Uncertainty
- MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: RE1210222-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-073 Lab ID: 1210222-9

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 13-Oct-12

Date Prepared: 18-Oct-12 Date Analyzed: 26-Oct-12 Prep Batch: RE121018-2 QCBatchID: RE121018-2-1 Run ID: RE121018-2A

Count Time: 15 minutes Report Basis: As Received Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.45 +/- 0.25	0.21	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210222-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-074

Lab ID: 1210222-10

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 14-Oct-12

Date Collected: 14-Oct-12

Date Prepared: 18-Oct-12

Date Analyzed: 26-Oct-12

Prep Batch: RE121018-2 QCBatchID: RE121018-2-1 Run ID: RE121018-2A

Run ID: RE121018-2A
Count Time: 15 minutes
Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.88 +/- 0.36	0.25	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210222-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-075

Lab ID: 1210222-11

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 14-Oct-12

 Date Collected: 14-Oct-12

 Date Prepared: 18-Oct-12
 Col

 Date Analyzed: 26-Oct-12
 Repo

Prep Batch: RE121018-2 QCBatchID: RE121018-2-1 Run ID: RE121018-2A

Run ID: RE121018-2A Count Time: 15 minutes Report Basis: As Received Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.68 +/- 0.37	0.44	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210222-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210222

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-076

Lab ID: 1210222-12

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 14-Oct-12

 Date Collected: 14-Oct-12
 Run ID: RE121018-2A

 Date Prepared: 18-Oct-12
 Count Time: 15 minutes

 Date Analyzed: 26-Oct-12
 Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.87 +/- 0.36	0.21	1	LT

Prep Batch: RE121018-2

QCBatchID: RE121018-2-1

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.
- M The requested MDC was not me

Abbreviation:

- TPU Total Propagated Uncertainty
- MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: RE1210222-1

QUALITY ASSURANCE SUMMARY SHEET

QUALITY ASSURANCE SUMMARY SHEET
ALS W.O. #/BATCH /2/0727
TEST RAZZG Metale
TEST Ra 226, Mefale METHOD RAPA
SOP/REV (PREP)
SOP/REV (ANAL)
Briefly document any QA or other problems or deviations associated with the analysis of samples. Problems could result from: log-in, color, odor, dilution, consistency, scheduling, equipment, or instrumentation, or may include documentation of minor deviations necessary due to unique DQQ's or sample characteristics.
Samples in work order 1210222 consisted of large glass fiber filters to be analyzed for Ra226
and Metals. The samples were placed into plastic cups and digested by adding 50 mL nitric
acid, and 50 mL hydrochioric acid. At this time a MB was created. After drying the digestions on the hotblock, 10 ml nitric acid and ~90 ml DI water were added. The samples
were filtered through fluted qualitative filter paper and brought to a volume of 100 mL with
DI water. Samples were then split for appropriate tests.
The digestate is a common solution for multiple analyses. Tracing and spiking was performed after the appropriate aliquot was taken from the common digestate for the analysis of Ra-226 and Metals. This reduces the potential for interferences caused by the different matrices used in the tracing and spiking solutions.
Per project manager, aliquots were taken as listed below.
Metals 10 ml or .1 sample equivalent
Ra226 90 ml or .9 sample equivalent
• • •
The following equation was used to calculate the filter equivalent:
Sample Equivalent $(x) = (Digestate volume taken for analysis)$
(Total volume of digestate)
.)
86~11
10 3 4
(B) 10/12/2
TECHNICIAN/ANALYST MALE 10/18/17
DEPARTMENT MANAGER MANAGER DATE 10/18/11

1.

3.

FORM 302r6.doc (4/22/04)



Metals Case Narrative

SENES Consultants Limited

Church Rock Phase II – SENES 350180-203 (200)

Work Order Number: 1210310

- 1. This report consists of 10 filter samples.
- 2. The samples were received intact at ambient temperature by ALS on 10/22/12.
- 3. The samples were prepared as described on the Quality Assurance Summary Sheet included with this report.
- 4. The samples were analyzed based on SW-846, 3rd Edition procedures.

Analysis by ICP-MS followed method 6020A and the current revision of SOP 806.

- All standards and solutions are NIST traceable and were used within their recommended shelf life.
- 6. The samples were prepared and analyzed within the established hold times.

All in house quality control procedures were followed, as described below.

- 7. General quality control procedures.
 - A preparation (method) blank, laboratory control sample, and laboratory control sample duplicate were digested and analyzed with the samples in this digestion batch.
 - The preparation (method) blank associated with this digestion batch was below the reporting limit for the requested analyte.
 - All laboratory control sample criteria were met.
 - All initial and continuing calibration blanks were below the reporting limit for the requested analyte.
 - All initial and continuing calibration verifications were within the acceptance criteria for the requested analyte.



- The interference check samples associated with Method 6020A were analyzed.
- 8. Matrix specific quality control procedures.

Sample 1210310-10 was designated as the quality control sample for this analysis. Due to limited sample volume, matrix QC consisted of a post spike and serial dilution.

Similarity of matrix and therefore relevance of the QC results should not be automatically inferred for any sample other than the native sample selected for QC.

- A post spike was analyzed with this batch. All acceptance criteria for accuracy were met.
- A serial dilution was analyzed with this ICP batch.
- 9. The samples were analyzed at a dilution in order to protect the ICP-MS from the high metal content.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Jill Latelle

Inorganics Primary Data Reviewer

norganics Final Data Reviewer



Inorganic Data Reporting Qualifiers

The following qualifiers are used by the laboratory when reporting results of inorganic analyses.

- Result qualifier -- If the analyte was analyzed for but not detected a "U" is entered.
- QC qualifier -- Specified entries and their meanings are as follows:
 - E The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
 - M Duplicate injection precision was not met.
 - N Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
 - Z Spiked recovery not within control limits. An explanatory note may be included in the narrative
 - * Duplicate analysis (relative percent difference) not within control limits.
 - S SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1210310

Client Name: SENES Consultants Limited Client Project Name: Church Rock Phase II Client Project Number: SENES 350180-203 (200) Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
RWPR-AS-077	1210310-1		FILTER	15-Oct-12	
RWPR-AS-078	1210310-2		FILTER	15-Oct-12	
RWPR-AS-079	1210310-3		FILTER	15-Oct-12	
RWPR-AS-080	1210310-4		FILTER	16-Oct-12	
RWPR-AS-081	1210310-5		FILTER	16-Oct-12	
RWPR-AS-082	1210310-6		FILTER	17-Oct-12	
RWPR-AS-083	1210310-7		FILTER	17-Oct-12	
RWPR-AS-084	1210310-8		FILTER	17-Oct-12	
RWPR-AS-085	1210310-9		FILTER	18-Oct-12	
RWPR-AS-086	1210310-10	_	FILTER	18-Oct-12	

Page 1 of 1



ALS Laboratory Group
225 Commerce Drive, Fort Collins, Colorado 80524
TF. (809) 443-1511 PH. (970) 480-1511 FX. (870) 480-1522

Chain-of-Custody

015012	-
WORKORDER #	
	Form 202r8

(ALS)		SAMF	SAMPLER Darrell Liles	iles					DATE	10/19/2012	PAGE		of	2
PROJECT NAME	PROJECT NAME Church Rock Phase II	5	SITE ID Churchrock	ock				T.	TURNAROUND	30 day	DISPOSAL	By Labor		Return to Client
PROJECT No.	PROJECT No. SENES 350180-203 (200)	EDD FORMAT	MAT					_						
		PURCHASE OF	DER Accoun	PURCHASE ORDER Account Number 816126858	6858									
COMPANY NAME	SENES	BILL TO COMP	ANY SENES	BILL TO COMPANY SENES Consultants Limited	nited									· · · · · · · · · · · · · · · · · · ·
SEND REPORT TO	Darrell Liles	INVOICE ATT	INVOICE ATTN TO Andrea Pegg	Pegg										
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDA	ESS 121 Gra	ADDRESS 121 Granton Dr., Unit #12	7			.						
CITY / STATE / ZIP	Englewood, CO 80112	CITY /STATE	/ZIP Richmo	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	3N4									
PHONE	PHONE (303) 521-1406	£	PHONE (905) 764-9380	4-9380										
FAX			FAX (905) 764-9386	4-9386										
E-MAIL	diles@senesusa.com	ú	E-MAIL apegg@senes.ca	@senes.ca										
Lab 10	Field ID	Matrix	Sample Date	Sample Time	** Sample Pres.		8	822-8 ls307-	æ,	Run Time			,	, , , , , , , , , , , , , , , , , , ,
e	RWPR-AS-077	ı	10/15/2012		-		=			549	21,960	STEERING	8	
(C)	RWPR-AS-078	ı.	10/15/2012		-		=	×		293	11,720			
6	RWPR-AS-079	ii.	10/15/2012		1		=	×		300	12,600			
Ħ	RWPR-AS-080	Ŀ	10/16/2012		1		=	×		209	24,200			
8	RWPR-AS-081	Ŀ	10/16/2012		1		_	×		603	24,723			
9	RWPR-AS-082	Ь	10/17/2012		1		-	×		579	23,160			
0	RWPR-AS-083	Ь	10/17/2012		-		_	×		571	22,840			
Ø	RWPR-AS-084	ш	10/17/2012		-		=	×		561	23,001			
G	RWPR-AS-085	ш	10/18/2012		-		=	×		500	20,000			
a	RWPR-AS-086	ш	10/18/21012		-		=	×		490	20,090			
*Time Zone (Circle):	*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = se	O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter	ild W=water	L = liquid E = e	extract F =	filter	L							

LEVEL III (Std QC + forms)
LEVEL IV (Std QC + forms + raw data) QC PACKAGE (check below)

X LEVEL II (Standard QC) 1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035 For metals or anions, please detail analytes below.

Comments:

Air samples - inlet flow side is folded inward and marked with X Preservative Key:

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	white was	Darrell Liles	10/15/2012 14/22	1422
RECEIVED BY	C Jrum ble	C Trimble	235 KI-56-01	٦٤٤) -
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

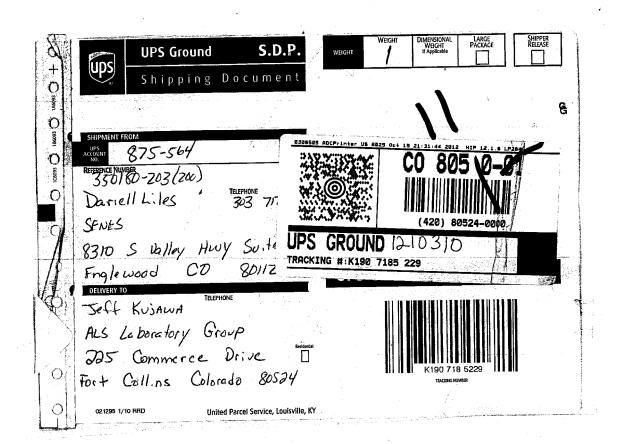


ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client:	SENES	Workorder No: 2	031	0	
Project Manager:	JK	Initials: COT		10-22	- 12
1. Does this project requi	ire any special handling in addition to standard	ALS procedures?		YES	NO
2 Are custody seals on	shipping containers intact?		NONE	(YES)	NO
3 Are Custody seals or	n sample containers intact?		NONE	YES	NO
4 Is there a COC (Cha	in-of-Custody) present or other representa	tive documents?		YES	NO
5. Are the COC and bo	ttle labels complete and legible?			(YES)	NO
_	ment with samples received? (IDs, dates, ti equested analyses, etc.)	mes, no. of samples, no. of		YES	NO
7 Were airbills / shipp	ing documents present and/or removable?		DROP OFF	YES	NO
8 Are all aqueous sample	es requiring preservation preserved correctly?	(excluding volatiles)	(N/A)	YES	NO
9 Are all aqueous non-	-preserved samples pH 4-9?		(N/A)	YES	NO
10. Is there sufficient san	mple for the requested analyses?			(YES)	NO
11. Were all samples pla	aced in the proper containers for the reque	sted analyses?		YES	NO
12 Are all samples with	in holding times for the requested analyse	s?		(YES)	NO
13. Were all sample con	tainers received intact? (not broken or lea	nking, etc.)	,	(YES)	NO
	siring no headspace (VOC, GRO, RSK/MI) Size of bubble: < green pea	EE, Rx CN/S, radon)> green pea	(N/A)	YES	NO
15. Do any water sample Amount of sediment		Amount	N/A	YES	NO
16 Were the samples sh	ripped on ice?		'	YES	NO
17. Were cooler tempera	ntures measured at 0.1-6.0°C?	gun used*: #2 #4	RAD ONLY	YES	(NO)
	Cooler #:				
	Temperature (°C): Amb				
No. of cu	istody seals on cooler:				
DOT Survey/ Acceptance Ex	xternal μR/hr reading: \\				
Information Backs	ground μR/hr reading: \ \ \rightarrow				
1 1	gs ≤ two times background and within DOT acceptance or	iteria? (YES) NO / NA (If no, see	Form 008.)		
	PROVIDE DETAILS BELOW FOR A NO RESPONS			ND #16.	
If applicable, was the client of	contacted? YES / NG /NA Contact:		_ Date/Tir	ne:	
Project Manager Signat	rure / Date:	10-22-61			
Jane 1. vermeder wiegen	711	**	-		

Form 201r24.xls (06/04/2012)

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002



Total Recoverable URANIUM

Method SW6020 Revision A

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: SENES Consultants Limited

Client Project ID: Church Rock Phase II SENES 350180-203 (200)

Work Order Number: 1210310 Final Volume: 100 ml
Reporting Basis: As Received Matrix: FILTER
Prep Method: SW3050B Result Units: UG/sample

Analyst: Ross Miller

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
RWPR-AS-077	1210310-1	10/15/2012	11/01/2012	11/01/2012	N/A	50	0.87	0.05		1 sample
RWPR-AS-078	1210310-2	10/15/2012	11/01/2012	11/01/2012	N/A	50	0.29	0.05		1 sample
RWPR-AS-079	1210310-3	10/15/2012	11/01/2012	11/01/2012	N/A	50	0.64	0.05		1 sample
RWPR-AS-080	1210310-4	10/16/2012	11/01/2012	11/01/2012	N/A	50	1.3	0.05		1 sample
RWPR-AS-081	1210310-5	10/16/2012	11/01/2012	11/01/2012	N/A	50	1.2	0.05		1 sample
RWPR-AS-082	1210310-6	10/17/2012	11/01/2012	11/01/2012	N/A	50	0.55	0.05		1 sample
RWPR-AS-083	1210310-7	10/17/2012	11/01/2012	11/01/2012	N/A	50	0.62	0.05		1 sample
RWPR-AS-084	1210310-8	10/17/2012	11/01/2012	11/01/2012	N/A	50	0.82	0.05		1 sample
RWPR-AS-085	1210310-9	10/18/2012	11/01/2012	11/01/2012	N/A	50	1.6	0.05		1 sample
RWPR-AS-086	1210310-10	10/18/2012	11/01/2012	11/01/2012	N/A	50	1.3	0.05		1 sample

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: im1210310-1

Date Printed: Wednesday, November 07, 2012

ALS Environmental -- FC

LIMS Version: 6.621

Page 1 of 1

ICPMS Metals

Method SW6020A Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: IP121101-22MB

Sample Matrix: FILTER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 01-Nov-12

Date Collected: N/A

Date Extracted: 01-Nov-12

Date Analyzed: 01-Nov-12

Prep Method: SW3050 Rev B

File

Prep Batch: IP121101-22 QCBatchID: IP121101-22-1 Run ID: IM121101-11A1

Cleanup: NONE Basis: N/A File Name: 001SMPL_ Sample Aliquot: 1 sample Final Volume: 100 ml Result Units: UG/sample Clean DF: 1

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-61-1	URANIUM	50	0.05	0.05	U	

Data Package ID: im1210310-1

ICPMS Metals

Method SW6020A

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: IP121101-22LCS

Sample Matrix: FILTER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 11/01/2012

 Date Collected: N/A
 Run ID: IM121101-11A1

 Date Extracted: 11/01/2012
 Cleanup: NONE

 Date Analyzed: 11/01/2012
 Basis: N/A

 Prep Method: SW3050B
 File Name: 002SMPL_

Sample Aliquot: 1 sample Final Volume: 100 ml Result Units: UG/sample

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-61-1	URANIUM	10	9.34	0.05		93	80 - 120%

Lab ID: IP121101-22LCSD

Sample Matrix: FILTER % Moisture: N/A

Date Collected: N/A
Date Extracted: 11/01/2012
Date Analyzed: 11/01/2012
Prep Method: SW3050B

Prep Batch: IP121101-22 QCBatchID: IP121101-22-1 Run ID: IM121101-11A1 Cleanup: NONE

Prep Batch: IP121101-22

QCBatchID: IP121101-22-1

Cleanup: NONE
Basis: N/A
File Name: 003SMPL_

Sample Aliquot: 1 sample Final Volume: 100 ml Result Units: UG/sample Clean DF: 1

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
7440-61-1	URANIUM	10	9.39	0.05		94	20	1

Data Package ID: im1210310-1

ICPMS Metals

Method SW6020

Analytical Spike Sample Recovery

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-086 **LabID**: 1210310-10A

Run ID: IM121101-11A1 Date Analyzed: 01-Nov-12 Result Units: ug/l

Target Analyte	Sample Result	Samp Qual	PS Result	PS Qual	Spike Added	PS % Rec.	Control Limits
URANIUM	0.266		2.20		2	97	75 - 125%

Data Package ID: im1210310-1

QUALITY ASSURANCE SUMMARY SHEET

	ALS W.O. #/BATCH_/2/03/O
	TEST prep, Re-226, Metals
	METHOD DY D
	SOP/REV (PREP)
	SOP/REV (ANAL)
ampl ched	ly document any QA or other problems or deviations associated with the analysis of les. Problems could result from: log-in, color, odor, dilution, consistency, luling, equipment, or instrumentation, or may include documentation of minor tions necessary due to unique DQO's or sample characteristics.
	82 IIIIIs
1.	Samples in work order 1210310 consisted of large glass fiber filters to be analyzed for Ra226 and Metals. The samples were placed into plastic cups and digested by adding 50 mL nitric acid, and 50 mL hydrochloric acid. At this time a MB was created. After drying the digestions on the hotblock, 10 ml nitric acid and ~90 ml DI water were added. The samples were filtered through fluted qualitative filter paper and brought to a volume of 100 mL with DI water. Samples were then split for appropriate tests.
L ^{2.}	The digestate is a common solution for multiple analyses. Tracing and spiking was performed after the appropriate aliquot was taken from the common digestate for the analysis of Ra-226 and Metals. This reduces the potential for interferences caused by the different matrices used in the tracing and spiking solutions.
3.	Per project manager, aliquots were taken as listed below. Metals 10 ml or .1 sample equivalent Ra226 90 ml or .9 sample equivalent
	The following equation was used to calculate the filter equivalent:
	Sample Equivalent (x) = (Digestate volume taken for analysis) (Total volume of digestate)
~	,///,
	11/1/12
	NICIAN/ANALYST John Mare 1/1/12 RTMENT MANAGER JUSTIN MARY DATE 11/1/12

FORM 302r6.doc (4/22/04)

		Sample	Conditio	n Form (Solids)
Analyst BU				
Analysis Date: 10/3	31/12	1		Method: PKW
1111000000		Sample	Condition (Vi	sual Appearance of Analysis, Aliquot at Time of Prep)
Order (Wark	Sample ID	Dry/Wet/ Moisi	Texture	Hern arks
1210310	\	Reclud	Alter	Large glass Fiber Filters
12101	2		1	1
	3			
	4			
	5_			
	6			
	7			
14.7	8			
	9		- - - - - - - - - - 	
	10	1 1	1.	J-
			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	11 17
				1110



Radium-226

Case Narrative

SENES Consultants Limited

Church Rock Phase II - SENES 350180-203 (200)

Work Order Number: 1210310

- 1. This report consists of the analytical results for 10 composite filter samples received by ALS on 10/22/2012.
- 2. These samples were prepared and analyzed according to the current revisions of SOP 783, with procedure modifications outlined on QASS #422651. The analyses were completed on 11/08/2012.
- 3. The analysis results for these samples are reported on an 'As Received' basis in units of pCi/sample.
- 4. Sample volume was insufficient to allow preparation of a duplicate. A laboratory control sample duplicate (LCSD) was prepared in lieu of a client sample duplicate.
- 5. No anomalous situations were encountered during the preparation or analysis of these samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Jean Anderson

Radiochemistry Primary Data Reviewer

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1210310

Client Name: SENES Consultants Limited
Client Project Name: Church Rock Phase II
Client Project Number: SENES 350180-203 (200)
Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
RWPR-AS-077	1210310-1		FILTER	15-Oct-12	
RWPR-AS-078	1210310-2		FILTER	15-Oct-12	
RWPR-AS-079	1210310-3		FILTER	15-Oct-12	
RWPR-AS-080	1210310-4		FILTER	16-Oct-12	
RWPR-AS-081	1210310-5		FILTER	16-Oct-12	
RWPR-AS-082	1210310-6		FILTER	17-Oct-12	
RWPR-AS-083	1210310-7		FILTER	17-Oct-12	
RWPR-AS-084	1210310-8		FILTER	17-Oct-12	
RWPR-AS-085	1210310-9		FILTER	18-Oct-12	
RWPR-AS-086	1210310-10	_	FILTER	18-Oct-12	



ALS Laboratory Group 225 Commerce Drive, Fort Collins, Colorado 80524 TF: (800) 443-1511 PH: (970) 480-1511 FX: (970) 460-1522

Chain-of-Custody

WORKGRDER | 1210310 Form 202r8

									The same of the sa				7
(ALS)		SAMP	SAMPLER Darrell Liles	lies					DATE 10/19/2012	PAGE	-	of 2	
PROJECT NAME	PROJECT NAME Church Rock Phase II	FIS	SITE ID Churchrock	ock				TURN	TURNAROUND 30 day	DISPOSAL B	By Lab or	Return to Client	ient
PROJECT No.	SENES 350180-203 (200)	EDD FORMAT	MAT										
		PURCHASE OR	DER Accoun	PURCHASE ORDER Account Number 816126858	6858								
COMPANY NAME	SENES	BILL TO COMP.	ANY SENES	BILL TO COMPANY SENES Consultants Limited	nited								
SEND REPORT TO	Darrell Liles	INVOICE ATT	INVOICE ATTN TO Andrea Pegg	Pegg			Γ						
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDR	ESS 121 Gra	ADDRESS 121 Granton Dr., Unit #12	12		_						
CITY / STATE / ZIP	Englewood, CO 80112	CITY /STATE	/ ZIP Richmo	CITY / STATE / ZIP Richmond Hill, ON L48 3N4	3N4		Ι						
PHONE	(303) 521-1406	ž	PHONE (905) 764-9380	4-9380									
FAX			FAX (905) 764-9386	4-9386									
E-MAIL	diles@senesusa.com	÷	E-MAIL apegg	apegg@senes.ca									
Lab ID	Field ID	Matrix	Sample Date	Sample Time	sample Pres.		977-E	lstoT-	Run Time				
e	RWPR-AS-077	ı	10/15/2012		-	+	= ×	+	549	21.960	Comments	e.	
0	RWPR-AS-078	L	10/15/2012		-		=	×	293	11,720			
6	RWPR-AS-079	u.	10/15/2012		+		× =	×	300	12,600			
Ħ	RWPR-AS-080	Ŀ	10/16/2012		-		×	×	607	24,200			
8	RWPR-AS-081	F .	10/16/2012		1		×	×	603	24,723			
<u></u>	RWPR-AS-082	ш	10/17/2012		-		× =	×	579	23,160			
0	RWPR-AS-083	ш	10/17/2012		-		=	×	571	22,840			
⊗	RWPR-AS-084	4	10/17/2012		-		× =	×	561	23,001			
(b)	RWPR-AS-085	F	10/18/2012		1		×	×	500	20,000			
0	RWPR-AS-086	7	10/18/21012		-		×	×	490	20,090			
*Time Zone (Circle):	EST CST MST PST Matrix:	O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter	id W = water	L = liquid E = e	extract F = 1	filter							
Tax makely and	The second section of the form								-		-		_

LEVEL III (Std QC + forms)
LEVEL IV (Std QC + forms + raw data) QC PACKAGE (check below)

X LEVEL II (Standard QC) 1-HC; 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035 For metals or anions, please detail analytes below.

Comments:

Air samples - inlet flow side is folded inward and marked with X 3 of 50

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	Samell Liles Darrell Liles	Darrell Liles	22/1/ 2102/91/01	1422
RECEIVED BY	RECEIVED BY C JULY DLL	C Trimble	SET) t1-(e-0)	- (235
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

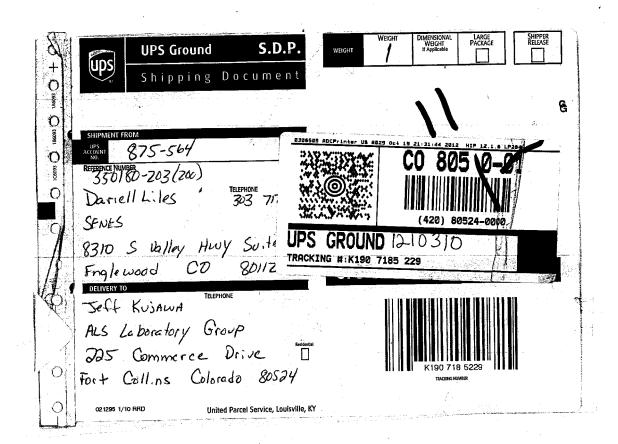
A

ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client:	SENES	Workorder No: 2	031	0	
Project Manager:	JK	Initials: COT		10-22	- 12
1. Does this project requi	ire any special handling in addition to standard	ALS procedures?		YES	NO
2 Are custody seals on	shipping containers intact?		NONE	(YES)	NO
3 Are Custody seals or	n sample containers intact?		NONE	YES	NO
4 Is there a COC (Cha	in-of-Custody) present or other representa	tive documents?		YES	NO
5. Are the COC and bo	ttle labels complete and legible?			(YES)	NO
6. Is the COC in agreer containers, matrix, re		YES	NO		
7 Were airbills / shipp	ing documents present and/or removable?		DROP OFF	YES	NO
8 Are all aqueous sample	es requiring preservation preserved correctly?	(excluding volatiles)	(N/A)	YES	NO
9 Are all aqueous non-	-preserved samples pH 4-9?		(N/A)	YES	NO
10. Is there sufficient san	mple for the requested analyses?			(YES)	NO
11. Were all samples pla	aced in the proper containers for the reque	sted analyses?		YES	NO
12 Are all samples with	in holding times for the requested analyse	s?		(YES)	NO
13. Were all sample con	tainers received intact? (not broken or lea	nking, etc.)	,	(YES)	NO
	siring no headspace (VOC, GRO, RSK/MI) Size of bubble: < green pea	EE, Rx CN/S, radon)> green pea	(N/A)	YES	NO
15. Do any water sample Amount of sediment		Amount	N/A	YES	NO
16 Were the samples sh	ripped on ice?		'	YES	NO
17. Were cooler tempera	ntures measured at 0.1-6.0°C?	gun used*: #2 #4	RAD ONLY	YES	(NO)
	Cooler #:				
	Temperature (°C): Amb				
No. of cu	istody seals on cooler:				
DOT Survey/ Acceptance Ex	xternal μR/hr reading: \\				
Information Backs	ground μR/hr reading: \ \ \rightarrow				
1 1	gs ≤ two times background and within DOT acceptance or	iteria? (YES) NO / NA (If no, see	Form 008.)		
	PROVIDE DETAILS BELOW FOR A NO RESPONS			ND #16.	
If applicable, was the client of	contacted? YES / NG /NA Contact:		_ Date/Tir	ne:	
Project Manager Signat	rure / Date:	10-22-61			
Jane 1. vermeder wiegen	711	**	-		

Form 201r24.xls (06/04/2012)

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002



PAI 783 Rev 10 Method Blank Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: RE121101-1MB

Sample Matrix: FILTER

Prep SOP: PAI 783 Rev 10

Prep Batch: RE121101-1 QCBatchID: RE121101-1-1 Final Aliquot: 0.900 sample Result Units: pCi/sample File Name: Manual Entry

Date Collected: 01-Nov-12 Date Prepared: 01-Nov-12

Run ID: RE121101-1A Count Time: 15 minutes

Date Analyzed: 08-Nov-12

	CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
ĺ	13982-63-3	Ra-226	0.09 +/- 0.14	0.21	1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

M - Requested MDC not met

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: RE1210310-1

PAI 783 Rev 10

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: RE121101-1LCS

Sample Matrix: FILTER

Prep SOP: PAI 783 Rev 10

Date Collected: 01-Nov-12

Date Prepared: 01-Nov-12 Date Analyzed: 08-Nov-12 Prep Batch: RE121101-1 QCBatchID: RE121101-1-1

Run ID: RE121101-1A Count Time: 15 minutes

Final Aliquot: 0.900 sample Result Units: pCi/sample

File Name: Manual Entry

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	51.8 +/- 9.6	0.3	50.00	104	57 - 126	Р

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Data Package ID: RE1210310-1

Abbreviations:

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

Page 1 of 2

PAI 783 Rev 10

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: RE121101-1LCSD

Sample Matrix: FILTER

Prep SOP: PAI 783 Rev 10

Date Collected: 01-Nov-12 Date Prepared: 01-Nov-12

Date Analyzed: 08-Nov-12

Prep Batch: RE121101-1 QCBatchID: RE121101-1-1

Run ID: RE121101-1A Count Time: 15 minutes

Final Aliquot: 0.900 sample Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	50.4 +/- 9.3	0.3	50.00	101	57 - 126	Р

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Data Package ID: RE1210310-1

Abbreviations:

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

Page 2 of 2

PAI 783 Rev 10

Duplicate Sample Results (DER)

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: Lab ID: RE121101-1LCSD Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10

Date Collected: 01-Nov-12 Date Prepared: 01-Nov-12 Date Analyzed: 08-Nov-12 Prep Batch: RE121101-1 QCBatchID: RE121101-1-1

Run ID: RE121101-1A Count Time: 15 minutes

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA Result Units: pCi/sample

File Name: Manual Entry

CASNO	Analyte	Sample		Duplicate			DER	DER	
	Allalyte	Result +/- 2 s TPU	MDC	Flags	Result +/- 2 s TPU	MDC	Flags		Lim
13982-63-3	Ra-226	51.8 +/- 9.6	0.3	Р	50.4 +/- 9.3	0.3	Р	0.108	2.13

Comments:

Duplicate Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13
- LT Result is less than Request MDC, greater than sample specific MDC
- M Requested MDC not met.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L LCS Recovery below lower control limit.
- H LCS Recovery above upper control limit.
- P LCS, Matrix Spike Recovery within control limits.
- N Matrix Spike Recovery outside control limits

Data Package ID: RE1210310-1

Date Printed: Friday, November 09, 2012

Abbreviations:

TPU - Total Propagated Uncertainty

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-077

Lab ID: 1210310-1

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 15-Oct-12

Date Prepared: 01-Nov-12
Date Analyzed: 08-Nov-12

Prep Batch: RE121101-1 QCBatchID: RE121101-1-1 Run ID: RE121101-1A

Count Time: 15 minutes
Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.42 +/- 0.25	0.26	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210310-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-078 Lab ID: 1210310-2

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 15-Oct-12

Date Prepared: 01-Nov-12 Date Analyzed: 08-Nov-12 Prep Batch: RE121101-1 QCBatchID: RE121101-1-1 Run ID: RE121101-1A

Count Time: 15 minutes Report Basis: As Received Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.19 +/- 0.18	0.23	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210310-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-079 Lab ID: 1210310-3

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 15-Oct-12

Date Prepared: 01-Nov-12 Date Analyzed: 08-Nov-12 Prep Batch: RE121101-1 QCBatchID: RE121101-1-1 Run ID: RE121101-1A

Count Time: 15 minutes Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.41 +/- 0.24	0.21	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210310-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-080 Lab ID: 1210310-4 Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 16-Oct-12

Date Collected: 16-Oct-12

Date Prepared: 01-Nov-12

Date Analyzed: 08-Nov-12

Prep Batch: RE121101-1 QCBatchID: RE121101-1-1 Run ID: RE121101-1A

Run ID: RE121101-1A Mo
Count Time: 15 minutes Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.56 +/- 0.28	0.08	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210310-1

Date Printed: Friday, November 09, 2012

13 of 20

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-081 Lab ID: 1210310-5

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 16-Oct-12

Date Prepared: 01-Nov-12 Date Analyzed: 08-Nov-12 Prep Batch: RE121101-1 QCBatchID: RE121101-1-1 Run ID: RE121101-1A

Prep Basis: As Received Moisture(%): NA Count Time: 15 minutes Result Units: pCi/sample File Name: Manual Entry Report Basis: As Received

Final Aliquot: 0.900 sample

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.52 +/- 0.32	0.36	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210310-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-082 Lab ID: 1210310-6 Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 17-Oct-12

Date Collected: 17-Oct-12 Date Prepared: 01-Nov-12 Date Analyzed: 08-Nov-12 Prep Batch: RE121101-1 QCBatchID: RE121101-1-1 Run ID: RE121101-1A

Count Time: 15 minutes
Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.56 +/- 0.29	0.22	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210310-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-083

Lab ID: 1210310-7

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 17-Oct-12

Date Collected: 17-Oct-12 Date Prepared: 01-Nov-12 Date Analyzed: 08-Nov-12 Prep Batch: RE121101-1 QCBatchID: RE121101-1-1 Run ID: RE121101-1A

Run ID: RE121101-1A Count Time: 15 minutes Report Basis: As Received Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.35 +/- 0.27	0.35	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

·

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210310-1

Date Printed: Friday, November 09, 2012

16 of 20

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-084 Lab ID: 1210310-8

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10

Date Collected: 17-Oct-12 Date Prepared: 01-Nov-12 Date Analyzed: 08-Nov-12 Prep Batch: RE121101-1 QCBatchID: RE121101-1-1 Run ID: RE121101-1A

Count Time: 15 minutes Report Basis: As Received Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.52 +/- 0.36	0.46	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210310-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-085 Lab ID: 1210310-9

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 18-Oct-12

Date Prepared: 01-Nov-12 Date Analyzed: 08-Nov-12 Prep Batch: RE121101-1 QCBatchID: RE121101-1-1 Run ID: RE121101-1A

Count Time: 15 minutes Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.45 +/- 0.28	0.32	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210310-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210310

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-086 Lab ID: 1210310-10

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10

Date Collected: 18-Oct-12 Date Prepared: 01-Nov-12 Date Analyzed: 08-Nov-12 Prep Batch: RE121101-1 QCBatchID: RE121101-1-1 Run ID: RE121101-1A

Count Time: 15 minutes Report Basis: As Received Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA Result Units: pCi/sample

File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.64 +/- 0.33	0.31	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1210310-1

QUALITY ASSURANCE SUMMARY SHEET

	ALS W.O.#/BATCH_/2/03/0
	TEST pro, Ra-226, Metals
	METHOD DY D
	SOP/REV (PREP)
	SOP/REV (ANAL)
samp sched	ly document any QA or other problems or deviations associated with the analysis of les. Problems could result from: log-in, color, odor, dilution, consistency, luling, equipment, or instrumentation, or may include documentation of minor tions necessary due to unique DQO's or sample characteristics.
	BZ 11/1/12
1.	Samples in work order 1210310 consisted of large glass fiber filters to be analyzed for Ra22 and Metals. The samples were placed into plastic cups and digested by adding 50 mL nitric acid, and 50 mL hydrochloric acid. At this time a MB was created. After drying the digestions on the hotblock, 10 ml nitric acid and ~90 ml DI water were added. The samples were filtered through fluted qualitative filter paper and brought to a volume of 100 mL with DI water. Samples were then split for appropriate tests.
1/2.2.	The digestate is a common solution for multiple analyses. Tracing and spiking was perform after the appropriate aliquot was taken from the common digestate for the analysis of Ra-220 and Metals. This reduces the potential for interferences caused by the different matrices use in the tracing and spiking solutions.
3,	Per project manager, aliquots were taken as listed below.
٥.	Metals 10 ml or .1 sample equivalent
	Ra226 90 ml or .9 sample equivalent
	The following equation was used to calculate the filter equivalent:
	Sample Equivalent (x) = (Digestate volume taken for analysis) (Total volume of digestate)
~	By Willy
	8.76
TECH	NICIAN/ANALYST JOE MAN DATE 1/1/12
DEPA	RTMENT MANAGER JUSTIN GRAP DATE 11/1/12
	-

FORM 302r6.doc (4/22/04)



Metals Case Narrative

SENES Consultants Limited

Church Rock Phase II – SENES 350180-203 (200)

Work Order Number: 1211079

- This report consists of 22 filter samples.
- 2. The samples were received intact at ambient temperature by ALS on 11/06/12.
- 3. The samples were prepared as described on the Quality Assurance Summary Sheet included with this report.
- 4. The samples were analyzed based on SW-846, 3rd Edition procedures.
 - Analysis by ICP-MS followed method 6020A and the current revision of SOP 806.
- All standards and solutions are NIST traceable and were used within their recommended shelf life.
- 6. The samples were prepared and analyzed within the established hold times.

All in house quality control procedures were followed, as described below.

- 7. General quality control procedures.
 - A preparation (method) blank, laboratory control sample, and laboratory control sample duplicate were digested and analyzed with the samples in each digestion batch.
 - The preparation (method) blank associated with each digestion batch was below the reporting limit for the requested analyte.
 - All laboratory control sample criteria were met.
 - All initial and continuing calibration blanks were below the reporting limit for the requested analyte.
 - All initial and continuing calibration verifications were within the acceptance criteria for the requested analyte.



- The interference check samples associated with Method 6020A were analyzed.
- 8. Matrix specific quality control procedures.

Samples 1211079-20 and -22 were designated as the quality control samples for this analysis. Due to limited sample volume, matrix QC consisted of a post spike and serial dilution.

Similarity of matrix and therefore relevance of the QC results should not be automatically inferred for any sample other than the native sample selected for QC.

- A post spike was analyzed with each batch. All acceptance criteria for accuracy were met.
- A serial dilution was analyzed with each ICP batch.
- The samples were analyzed at a dilution in order to protect the ICP-MS from the high metal content.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Inorganics Primary Data Reviewer

Inorganics Final Data Reviewer

11-26-12 Data



Inorganic Data Reporting Qualifiers

The following qualifiers are used by the laboratory when reporting results of inorganic analyses.

- Result qualifier -- If the analyte was analyzed for but not detected a "U" is entered.
- QC qualifier -- Specified entries and their meanings are as follows:
 - E The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
 - M Duplicate injection precision was not met.
 - N Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
 - Z Spiked recovery not within control limits. An explanatory note may be included in the narrative
 - * Duplicate analysis (relative percent difference) not within control limits.
 - S SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1211079

Client Name: SENES Consultants Limited
Client Project Name: Church Rock Phase II
Client Project Number: SENES 350180-203 (200)
Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
RWPR-AS-087	1211079-1		FILTER	24-Oct-12	12:50
RWPR-AS-088	1211079-2		FILTER	24-Oct-12	17:10
RWPR-AS-089	1211079-3		FILTER	24-Oct-12	14:25
RWPR-AS-090	1211079-4		FILTER	25-Oct-12	16:38
RWPR-AS-091	1211079-5		FILTER	26-Oct-12	17:05
RWPR-AS-092	1211079-6		FILTER	26-Oct-12	17:13
RWPR-AS-093	1211079-7		FILTER	26-Oct-12	17:22
RWPR-AS-094	1211079-8		FILTER	27-Oct-12	17:02
RWPR-AS-095	1211079-9		FILTER	27-Oct-12	17:14
RWPR-AS-096	1211079-10		FILTER	27-Oct-12	17:23
RWPR-AS-097	1211079-11		FILTER	29-Oct-12	12:30
RWPR-AS-098	1211079-12		FILTER	29-Oct-12	17:05
RWPR-AS-099	1211079-13		FILTER	29-Oct-12	16:51
RWPR-AS-100	1211079-14		FILTER	30-Oct-12	16:55
RWPR-AS-101	1211079-15		FILTER	30-Oct-12	17:10
RWPR-AS-102	1211079-16		FILTER	30-Oct-12	17:20
RWPR-AS-103	1211079-17		FILTER	31-Oct-12	15:55
RWPR-AS-104	1211079-18		FILTER	31-Oct-12	16:10
RWPR-AS-105	1211079-19		FILTER	31-Oct-12	16:24
RWPR-AS-106	1211079-20		FILTER	01-Nov-12	16:47
RWPR-AS-107	1211079-21		FILTER	01-Nov-12	17:05
RWPR-AS-108	1211079-22		FILTER	01-Nov-12	17:15



ALS Laboratory Group

Chain-of-Custody

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	225 Commerce Drive, Fort Collins, Colorado 80524 TF: (800) 443-1611 PH: (970) 490-1611 FX: (970) 490-1522	0-1522								Form 202r8	(2/1074	<u>57</u>	2	
		SAME	SAMPLER Liles						DATE	02-Nov-12	PAGE	-	of 3	
PROJECT NAME	PROJECT NAME Church Rock Phase II	IS	SITE ID Churchrock	ock				TURN	TURNAROUND	30 day	DISPOSAL	By Labor	Return to Client	ij
PROJECT No.	SENES 350180-201 (400)	EDD FORMAT	МАТ											
		PURCHASE ORDER Account Number 816126858	DER Accoun	t Number 81612	8589		l							
COMPANY NAME	SENES	BILL TO COMPANY SENES Consultants Limited	ANY SENES	Consultants Lir	nited		Γ							
SEND REPORT TO	Darrell Liles	INVOICE ATT	INVOICE ATTN TO Andrea Pegg	Pegg			Γ							
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDR	ESS 121 Gra	ADDRESS 121 Granton Dr., Unit #12	2									
CITY / STATE / ZIP	Englewood, CO 80112	CITY/STATE	/ ZIP Richmo	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	3N4									
PHONE	PHONE (970) 420-8669	Æ	PHONE (905) 764-9380	4-9380										
FAX			FAX (905) 764-9386	4-9386				_						
E-MAIL	dliles@senesusa.com	1	E-MAIL apegg(apegg@senes.ca										
Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Sample Pres.		မွ							
								:-5A T-U	æ	Run Time (min)	Total Flow (ft^3)	(ft^3)	Comments	,,
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0	RWPR-AS-089	п (24/10/2012	1425	1		=	×		380	15200	,	*	
(f)	RWPR-AS-090	н	25/10/2012	1638	1		-	×		575	23000	,		
(b)	RWPR-AS-091	ш	26/10/2012	1705	1		11	×		470	19270	,		
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F 27/10/2012 1714 1 1 27/10/2012 F 27/10/2012 1723 1 Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = fitter RWPR-AS-095
RWPR-AS-096
EST CST MST PST Time Zone (Circle):

Comments:	<u> </u>					8	PACK	QC PACKAGE (check below)
* Samples taken on 10/24/2012 were blown over by wind; 087 and 080 were both found face down in dirt	shi 10/24 Ind face	4/2012 w	ere blown dirt	over by v	vind; 087 a	<u> </u>	×	X LEVEL II (Standard QC)
			į			<u> </u>	_	LEVEL III (Std QC + forms)
								LEVEL IV (Std QC + forms + raw data)
of								
Preservative Key: 1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 8-5035		2-HNO3	3-H2SO4	4-NaOH	5-NaHSO4	7-Other	8-40	legrees C 9-5035

	SIGNATURE	PRINTED NAME	DATE	BMLL
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26/10/2012 26/10/2012

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ALS Laboratory Group 225 Commerce Dive, For Collins, Colorade 99224 TE- RADOL 423-461 Dec. 1979, April 1979,

Chain-of-Custody

WORKORDER 1211078

	TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 460-1522	1622							Form 202r8		
		SAMPL	SAMPLER Lites				_	ð	DATE 02-Nov-12	PAGE 2	of 3
PROJECT NAME	PROJECT NAME Church Rock Phase II	SITE	SITE ID Churchrook		:			TURNAROUND	Np 30 day	DISPOSAL By Lab or	Return to Client
PROJECT No.	PROJECT No. SENES 350180-201 (400)	EDD FORMAT	AT								
		PURCHASE ORDER Account Number 816126858	ER Account Nu	mber 816126	858						
COMPANY NAME	SENES	BILL TO COMPA	BILL TO COMPANY SENES Consultants Limited	sultants Limi	- P		_				
SEND REPORT TO	Darreil Liles	INVOICE ATTN	INVOICE ATTN TO Andrea Pegg	6			Γ.				
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDRE	ADDRESS 121 Granton Dr., Unit #12	Dr., Unit #12							
CITY / STATE / ZIP	Englewood, CO 80112	CITY / STATE /	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	III, ON L4B 3	N4						
PHONE	PHONE (970) 420-8669	PHO	PHONE (905) 764-9380	980							
FAX			FAX (905) 764-9386	986							
E-WAIL	dilles@senesusa.com	EM	E-MAIL apegg@senes.ca	enes.ca			_				
Lab ID	Field ID	Matrix	Sample Date	Sample	sample Pres.	Si Si		70			
						-	S-67	от-и	Run Time (min)	Total Flow (ft^3)	Comments
(=	RWPR-AS-097	F 23	29/10/2012	. 1230	4-	-	×	×	289	11560	A
G	RWPR-AS-098	F 28	29/10/2012	1705	-	=	×	×	548	21920	
(5)	RWPR-AS-099	F	29/10/2012	1651	.	=	×	×	513	23085	
(b)	RWPR-AS-100	ı.	30/10/2012	1655	۲-	=	*	×	505	20200	
(3)	RWPR-AS-101	н Ж	30/10/2012	1710	1	=	×	×	505	20200	
(16)	RWPR-AS-102	н	30/10/2012	1720	-	=	×	×	499	19960	
Ð	RWPR-AS-103	E.	31/10/2012	1555		=	×	×	498	19920	
(g)	RWPR-AS-104	ir.	31/10/2012	1610	-	=	×	×	498	19920	
(b)	RWPR-AS-105	F	31/10/2012	1624	-	=	×	×	502	20080	
(et)		.0	01/10/2012	1647	1	=	×	×	527	21080	
"Time Zone (Circle):	Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = fiber	INS = non-soil soli	1 W=water L=	liquid E=ex	tract F=f	Ter.					

	SIGNATURE	PRINTED NAME	DATE	TIME
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ALS Laboratory Group

Chain-of-Custody

TF:	TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522	1622							Form 202r8		1257	ر د د	
		SAMPLER LIIES	3 Liles						DATE 02-Nov-12	PAGE	m	of	_
PROJECT NAME Ch	PROJECT NAME Church Rock Phase II	SITE	SITE ID Churchrook				L	T L	TURNAROUND 30 day	DISPOSAL	By Labor	Return to Client	Client
PROJECT No. SE	PROJECT No. SENES 350180-201 (400)	EDD FORMAT	L .										
		PURCHASE ORDER Account Number 816126858	R Account Nun	nber 8161268	88								
COMPANY NAME	SENES	BILL TO COMPANY SENES Consultants Limited	Y SENES Cons	ultants Limite	2		ı —						
SEND REPORT TO	Dairell Liles	INVOICE ATTIN TO Andrea Pegg	Andrea Pegg										
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDRES	ADDRESS 121 Granton Dr., Unit #12	Dr., Unit #12									
CITY / STATE / ZIP	Englewood, CO 80112	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	P Richmond Hi	II, ON LAB 3N	4		1 ;						
PHONE (97	PHONE (970) 420-8669	NOHA	PHONE (905) 764-9380	98									
FAX		FA	FAX (905) 764-9386	96			_						
E-MAIL	diiles@senesusa.com	E-MAII	E-MAIL apegg@senes.ca	nes.ca									
Lab ID	Field ID	Matrix	Sample Sa Date	Sample S	# Sample Pres.	S S	92Z-E)	TOT-1	Dun Time (min)	Total Flow (#A%)	(8v#)	Comments	ğ
O RW	RWPR-AS-107	F 29/	29/10/2012	1705	-	=	1	×	537	21480			
	RWPR-AS-108	F 28/	29/10/2012	1715	-	=	×	×	534	21360		8	
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						-							
						_							
						_							
*Time Zone (Circle): EST CST MST PST	CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter	il NS = non-sail solid	W = water L = !	iquid E = extr	ract F=filts	Ļ							

1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other

Preservative Key:

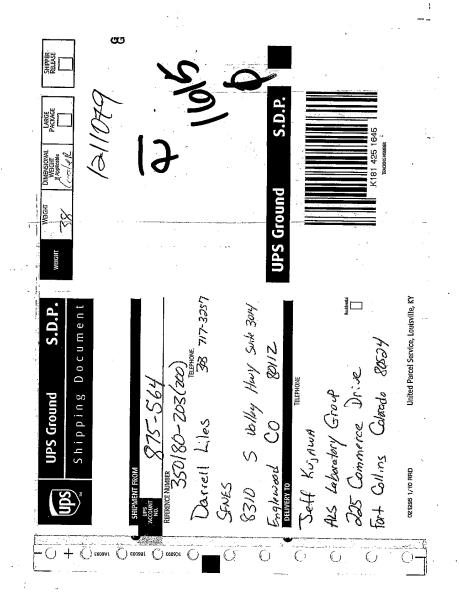
Lawen Schmitz 116/12 1615

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ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

(ALS)		C			100	11010	1	
	Client:	Senes	,		der No: 120			_
Project N	Aanager:	IRK			Initials:	Date:	11/6/1	2_
1. Does this pro	ject require any	special handlin	g in addition to sta	ndard ALS proce	edures?		YES	(NO)
2. Are custody	seals on shipp	ing container	s intact?			NONE) YES	NO
3. Are Custody	y seals on samp	ole containers	intact?			NONE	YES	NO
4. Is there a Co	OC (Chain-of-0	Custody) pres	ent or other repre	sentative docu	ments?		YES	NO
5. Are the CO	C and bottle lal	bels complete	and legible?				YES	NO
	in agreement w matrix, request	•	eceived? (IDs, da etc.)	ites, times, no. o	f samples, no.	of	YES	NO
7. Were airbill	ls / shipping do	cuments pres	ent and/or remov	able?		DROP OFF	YES) NO
8. Are all aqueo	ous samples requ	iring preservati	on preserved corre	ctly? (excluding	volatiles)	(N/A)	YES	NO
	eous non-prese				*	(N/A)	YES	NO
10. Is there suff	ficient sample f	or the request	ted analyses?				(YES)	NO
11. Were all sar	mples placed in	the proper co	ontainers for the	requested analy	ses?		(YES)	NO
			the requested ar				(YES)	NO
			act? (not broken)		YES	NO
14. Are all samp headspace f			(VOC, GRO, RS < green pea	K/MEE, Rx Cl > green	. ,	N/A	YES	NO
15. Do any wate	er samples con	tain sediment	? moderate	heavy	Amoun	t N/A	YES	NO
	imples shipped						YES	(NO)
	r temperatures) 1-6 0°C?	IR gun used*:	#2 #4	RAD	YES	NO
11010 00010	· · · · · · · · · · · · · · · · · · ·	Cooler #		ny gun useu .	π2 πη	ONLY		
	To	mperature (°C)						
			,					
DOT Survey/	No. of custody							- ——
Acceptance Information		μR/hr reading						- —
	-	μR/hr reading			<u> </u>			
			and within DOT accep					
Additional Info	ormation: PRO		BELOW FOR A NO RE		`	'E, EXCEPT#1 A		11.
(* 6) D	11077-2	V (RWP		coc date	4 (P	z labo	- 11	1/1/12
	1 -2	1	1-107)		= 10 29 1		= 1	1,11,2
****	<u> </u>	22 ()	J-108)	V	=10/29/1	2 V	_=11	1112
								
								-
If applicable, was	s the client contact	ed?(YES) NO	Contact:	tiles		Date/T	ime: [[(-6-1 <i>t</i>
	ger Signature / l		1 /kgi	11-6-			-	
Form 201r24.x	ds (06/04/2012)	1/0	*IR Gun #2: Oakton, *IR Gun #4: Oakton,					. 1



Total Recoverable URANIUM

Method SW6020 Revision A

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: SENES Consultants Limited

Client Project ID: Church Rock Phase II SENES 350180-203 (200)

Work Order Number: 1211079 Final Volume: 100 ml
Reporting Basis: As Received Matrix: FILTER
Prep Method: SW3050B Result Units: UG/sample

Analyst: Ross Miller

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
RWPR-AS-087	1211079-1	10/24/2012	11/09/2012	11/09/2012	N/A	50	2.3	0.05		1 sample
RWPR-AS-088	1211079-2	10/24/2012	11/09/2012	11/09/2012	N/A	50	0.82	0.05		1 sample
RWPR-AS-089	1211079-3	10/24/2012	11/09/2012	11/09/2012	N/A	50	2.9	0.05		1 sample
RWPR-AS-090	1211079-4	10/25/2012	11/09/2012	11/09/2012	N/A	50	0.84	0.05		1 sample
RWPR-AS-091	1211079-5	10/26/2012	11/09/2012	11/09/2012	N/A	50	0.9	0.05		1 sample
RWPR-AS-092	1211079-6	10/26/2012	11/09/2012	11/09/2012	N/A	50	0.54	0.05		1 sample
RWPR-AS-093	1211079-7	10/26/2012	11/09/2012	11/09/2012	N/A	50	0.44	0.05		1 sample
RWPR-AS-094	1211079-8	10/27/2012	11/09/2012	11/09/2012	N/A	50	1.2	0.05		1 sample
RWPR-AS-095	1211079-9	10/27/2012	11/09/2012	11/09/2012	N/A	50	0.56	0.05		1 sample
RWPR-AS-096	1211079-10	10/27/2012	11/09/2012	11/09/2012	N/A	50	1.9	0.05		1 sample
RWPR-AS-097	1211079-11	10/29/2012	11/09/2012	11/09/2012	N/A	50	1.1	0.05		1 sample
RWPR-AS-098	1211079-12	10/29/2012	11/09/2012	11/09/2012	N/A	50	0.48	0.05		1 sample
RWPR-AS-099	1211079-13	10/29/2012	11/09/2012	11/09/2012	N/A	50	0.98	0.05		1 sample
RWPR-AS-100	1211079-14	10/30/2012	11/09/2012	11/09/2012	N/A	50	1.1	0.05		1 sample
RWPR-AS-101	1211079-15	10/30/2012	11/09/2012	11/09/2012	N/A	50	0.7	0.05		1 sample
RWPR-AS-102	1211079-16	10/30/2012	11/09/2012	11/09/2012	N/A	50	0.74	0.05		1 sample
RWPR-AS-103	1211079-17	10/31/2012	11/09/2012	11/09/2012	N/A	50	1.1	0.05		1 sample
RWPR-AS-104	1211079-18	10/31/2012	11/09/2012	11/09/2012	N/A	50	0.58	0.05		1 sample

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: im1211079-1

Date Printed: Monday, November 26, 2012 ALS Environmental -- FC

LIMS Version: 6.621

Page 1 of 2

Total Recoverable URANIUM

Method SW6020 Revision A

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: SENES Consultants Limited

Client Project ID: Church Rock Phase II SENES 350180-203 (200)

Work Order Number: 1211079 Final Volume: 100 ml
Reporting Basis: As Received Matrix: FILTER
Prep Method: SW3050B Result Units: UG/sample

Analyst: Ross Miller

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
RWPR-AS-105	1211079-19	10/31/2012	11/09/2012	11/09/2012	N/A	50	0.54	0.05		1 sample
RWPR-AS-106	1211079-20	11/01/2012	11/09/2012	11/09/2012	N/A	50	1.4	0.05		1 sample
RWPR-AS-107	1211079-21	11/01/2012	11/09/2012	11/09/2012	N/A	50	0.76	0.05		1 sample
RWPR-AS-108	1211079-22	11/01/2012	11/09/2012	11/09/2012	N/A	50	0.6	0.05		1 sample

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: im1211079-1

Date Printed: Monday, November 26, 2012

ALS Environmental -- FC

LIMS Version: 6.621

Page 2 of 2

Method SW6020A Method Blank

Prep Batch: IP121109-21

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: IP121109-21MB

Sample Matrix: FILTER % Moisture: N/A Date Collected: N/A

QCBatchID: IP121109-21-1 Run ID: IM121109-10A1 Date Extracted: 09-Nov-12 Cleanup: NONE Date Analyzed: 09-Nov-12 Basis: N/A Prep Method: SW3050 Rev B File Name: 001SMPL.

Sample Aliquot: 1 sample Final Volume: 100 ml Result Units: UG/sample Clean DF:

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-61-1	URANIUM	50	0.05	0.05	U	

Data Package ID: im1211079-1

Method SW6020A Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: IP121109-22MB

Sample Matrix: FILTER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 09-Nov-12

 Date Collected: N/A
 Run ID: IM121109

 Date Extracted: 09-Nov-12
 Cleanup: NONE

 Date Analyzed: 09-Nov-12
 Basis: N/A

 Prep Method: SW3050 Rev B
 File Name: 030SMPL.

 Prep Batch:
 IP121109-21
 Sample Aliquot:
 1 sample

 QCBatchID:
 IP121109-21-2
 Final Volume:
 100 ml

 Run ID:
 IM121109-10A1
 Result Units:
 UG/sample

 Cleanup:
 NONE
 Clean DF:
 1

 Basis:
 N/A

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-61-1	URANIUM	50	0.05	0.05	U	

Data Package ID: im1211079-1

Method SW6020A

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: IP121109-21LCS

Sample Matrix: FILTER
% Moisture: N/A
Date Collected: N/A

Date Extracted: 11/09/2012 Date Analyzed: 11/09/2012 Prep Method: SW3050B **Prep Batch:** IP121109-21 **QCBatchID:** IP121109-21-1

Run ID: IM121109-10A1 Cleanup: NONE Basis: N/A File Name: 002SMPL. Sample Aliquot: 1 sample Final Volume: 100 ml Result Units: UG/sample

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-61-1	URANIUM	10	9.3	0.05		93	80 - 120%

Lab ID: IP121109-21LCSD

Sample Matrix: FILTER
% Moisture: N/A

Date Collected: N/A
Date Extracted: 11/09/2012
Date Analyzed: 11/09/2012
Prep Method: SW3050B

Prep Batch: IP121109-21 QCBatchID: IP121109-21-1 Run ID: IM121109-10A1

Run ID: IM121109-Cleanup: NONE Basis: N/A File Name: 003SMPL. Sample Aliquot: 1 sample Final Volume: 100 ml Result Units: UG/sample

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
7440-61-1	URANIUM	10	9.3	0.05		93	20	0

Data Package ID: im1211079-1

Date Printed: Monday, November 26, 2012

Method SW6020A

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Target Analyte

Lab ID: IP121109-22LCS

Sample Matrix: FILTER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 11/09/2012

Date Extracted: 11/09/2012 Date Analyzed: 11/09/2012 Prep Method: SW3050B

Spike

Added

10

Prep Batch: IP121109-21 QCBatchID: IP121109-21-2 Run ID: IM121109-10A1

Cleanup: NONE Basis: N/A

File Name: 031SMPL.

Reporting

Sample Aliquot: 1 sample
Final Volume: 100 ml
Result Units: UG/sample
Clean DF: 1

LCS % Rec.	Control Limits	

94

Lab ID: IP121109-22LCSD

URANIUM

CASNO

7440-61-1

Sample Matrix: FILTER % Moisture: N/A

Date Collected: N/A
Date Extracted: 11/09/2012
Date Analyzed: 11/09/2012

Prep Method: SW3050B

Prep Batch: IP121109-21

QCBatchID: IP121109-21-2 Run ID: IM121109-10A1 Cleanup: NONE

0.05

Result

Qualifier

Basis: N/A File Name: 032SMPL. Sample Aliquot: 1 sample Final Volume: 100 ml

80 - 120%

Result Units: UG/sample Clean DF: 1

	CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
7	440-61-1	URANIUM	10	9.52	0.05		95	20	1

LCS

Result

9.38

Data Package ID: im1211079-1

Date Printed: Monday, November 26, 2012

Method SW6020

Analytical Spike Sample Recovery

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-106 **LabID:** 1211079-20A

Run ID: IM121109-10A1

Date Analyzed: 09-Nov-12

Result Units: ug/l

Target Analyte	Sample Result	Samp Qual	PS Result	PS Qual	Spike Added	PS % Rec.	Control Limits
URANIUM	0.289		2.20		2	96	75 - 125%

Data Package ID: im1211079-1

Date Printed: Monday, November 26, 2012

Method SW6020

Analytical Spike Sample Recovery

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-108
LabID: 1211079-22A

Run ID: IM121109-10A1

Date Analyzed: 09-Nov-12

Result Units: ug/l

Target Analyte	Sample Result	Samp Qual	PS Result	PS Qual	Spike Added	PS % Rec.	Control Limits
URANIUM	0.121		2.08		2	98	75 - 125%

Data Package ID: im1211079-1

QUALITY ASSURANCE SUMMARY SHEET

	ALS W.O. #/BATCH 1211079
	TEST Ra-226, Melols
	METHOD prep
	SOP/REV (PREP)
	SOP/REV (ANAL)
san sch	efly document any QA or other problems or deviations associated with the analysis of apples. Problems could result from: log-in, color, odor, dilution, consistency, leduling, equipment, or instrumentation, or may include documentation of minor viations necessary due to unique DQO's or sample characteristics.
1.	Samples in work order 1211079 consisted of large glass fiber filters to be analyzed for Ra226 and Metals. The samples were placed into plastic cups and digested by adding 50 mL nitric acid, and 50 mL hydrochloric acid. At this time a MB was created. After drying the digestions on the hotblock, 10 ml nitric acid and ~90 ml DI water were added. The samples were filtered through fluted qualitative filter paper and brought to a volume of 100 mL with DI water. Samples were then split for appropriate tests.
2. Y	The digestate is a common solution for multiple analyses. Tracing and spiking was performed after the appropriate aliquot was taken from the common digestate for the analysis of Ra-226 and Metals. This reduces the potential for interferences caused by the different matrices used in the tracing and spiking solutions.
3.	Per project manager, aliquots were taken as listed below. Metals 10 ml or .1 sample equivalent Ra226 90 ml or .9 sample equivalent
	The following equation was used to calculate the filter equivalent:
	Sample Equivalent $(x) = \frac{\text{(Digestate volume taken for analysis)}}{\text{(Total volume of digestate)}}$
	11/8/12
_	
TEO	CHNICIAN/ANALYST At Delic DATE 11/8/12
DE	PARTMENT MANAGER M/2 DATE 11/8/12
	////

FORM 302r6.doc (4/22/04)

		Sample	Conditio	n Form (S	iolias)		
naivs: BU							
Analysis Dale: 11	8/12			Method:	Ra-226	/metals (nep
Analysis Date: 17		Sample Dry/Wet/	Condition ((Isual Appeara	ince of Analysis	Aliquot at Time	ol Prep)
Oldel Avalja	10 1	Moisi	Texture		Hem:	arks	
1211079	A	closed	filter	Large	Gloergle	uss fall	275
121107	Z	1	1		1		
	3						
	<u>دم</u>		1 1				
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	5	-					
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	18						
	19						
	20	1	1	/	<	-	

		Sample	: Conditio	Form (Solids)
Analys: BU		,	·	0 221/
Analysis Dals 11/	8/12	1	To a dilumentation	Iviatriod: Ra-226/ Mctals prop sual Appsarance of Arial Valis Aliquot at Time of Prepi
Oldel Molk	Sample ID	Dry/Wet/ Wotst	Texture	Aem arks
1211079	2	PECPAR)	liller	Large Fiberglass Allus
	22			
	T			
			<u> </u>	
	_			
			1	9/8/12
		-	_/_	
	X			



Radium-226 Case Narrative

SENES Consultants Limited

Church Rock Phase II - SENES 350180-203 (200)

Work Order Number: 1211079

- This report consists of the analytical results for 22 composite filter samples received by ALS on 11/06/2012.
- These samples were prepared and analyzed according to the current revisions of SOP 783, with procedure modifications outlined on QASS #422656. The analyses were completed on 11/16/2012.
- The analysis results for these samples are reported on an 'As Received' basis in units of pCi/sample.
- Sample volume was insufficient to allow preparation of a duplicate. A laboratory control sample duplicate (LCSD) was prepared in lieu of a client sample duplicate for both batches.
- 5. No anomalous situations were encountered during the preparation or analysis of these samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Jean Anderson

Radiochemistry Primary Data)Reviewer

Radiochemistry Final Data Reviewer

Date

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1211079

Client Name: SENES Consultants Limited
Client Project Name: Church Rock Phase II
Client Project Number: SENES 350180-203 (200)
Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
RWPR-AS-087	1211079-1		FILTER	24-Oct-12	12:50
RWPR-AS-088	1211079-2		FILTER	24-Oct-12	17:10
RWPR-AS-089	1211079-3		FILTER	24-Oct-12	14:25
RWPR-AS-090	1211079-4		FILTER	25-Oct-12	16:38
RWPR-AS-091	1211079-5		FILTER	26-Oct-12	17:05
RWPR-AS-092	1211079-6		FILTER	26-Oct-12	17:13
RWPR-AS-093	1211079-7		FILTER	26-Oct-12	17:22
RWPR-AS-094	1211079-8		FILTER	27-Oct-12	17:02
RWPR-AS-095	1211079-9		FILTER	27-Oct-12	17:14
RWPR-AS-096	1211079-10		FILTER	27-Oct-12	17:23
RWPR-AS-097	1211079-11		FILTER	29-Oct-12	12:30
RWPR-AS-098	1211079-12		FILTER	29-Oct-12	17:05
RWPR-AS-099	1211079-13		FILTER	29-Oct-12	16:51
RWPR-AS-100	1211079-14		FILTER	30-Oct-12	16:55
RWPR-AS-101	1211079-15		FILTER	30-Oct-12	17:10
RWPR-AS-102	1211079-16		FILTER	30-Oct-12	17:20
RWPR-AS-103	1211079-17		FILTER	31-Oct-12	15:55
RWPR-AS-104	1211079-18		FILTER	31-Oct-12	16:10
RWPR-AS-105	1211079-19		FILTER	31-Oct-12	16:24
RWPR-AS-106	1211079-20		FILTER	01-Nov-12	16:47
RWPR-AS-107	1211079-21		FILTER	01-Nov-12	17:05
RWPR-AS-108	1211079-22		FILTER	01-Nov-12	17:15



ALS Laboratory Group

Chain-of-Custody

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	225 Commerce Drive, Fort Collins, Colorado 80524					WURNURDEK #	-	21040
ء.	TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522	-1522			Form 202r8		1	
1000		SAMPLER Liles	Liles	DATE	02-Nov-12	PAGE	1	of 3
1 144	Church Rock Phase II	SITEID	SITE ID Churchrock	TURNAROUND	30 day	DISPOSAL	By Lab or	DISPOSAL By Lab or Return to Client
اه ا	SENES 350180-201 (400)	EDD FORMAT						
		PURCHASE ORDER	PURCHASE ORDER Account Number 816126858					
₩	SENES	BILL TO COMPANY	SENES Consultants Limited					
9	Darrell Liles	INVOICE ATTN TO Andrea Pegg	Andrea Pegg					
10	8310 S. Valley Hwy., Suite 3014	ADDRESS	ADDRESS 121 Granton Dr., Unit #12					
	Englewood, CO 80112	CITY!STATE!ZIP	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4					
ш	(970) 420-8669	PHONE	(905) 764-9380		-			
×		FAX	(905) 764-9386					
۱ ⊒ ۱	diles@senesusa.com	E-WAIL	apegg@senes.ca					
I								

Total Flow (ft^3) 18080 21720 20920 11890 22160 15200 23000 17520 19270 438 543 542 523 230 380 575 470 452 TOT-U × × × × × × Ra-226 ---= = = | = | = | 8 # Sample Pres. 1710 1702 1250 1425 1713 1714 1638 1705 1722 24/10/2012 27/10/2012 24/10/2012 27/10/2012 26/10/2012 26/10/2012 26/10/2012 24/10/2012 25/10/2012 Matrix . L ш ıL ш ட 止 ட RWPR-AS-093 RWPR-AS-094 RWPR-AS-088 RWPR-AS-089 RWPR-AS-090 RWPR-AS-095 RWPR-AS-091 RWPR-AS-092 RWPR-AS-087 Lab ID 60060300

diles@senesusa.com

ADDRESS
CITY/STATE/ZIP
PHONE (9
FAX
FAX

COMPANY NAME

SEND REPORT TO

1723 1 L=liquid E=extract F=filter | F | 27/10/2012 | Matrix: O = oil | S = soil | NS = non-soil | S = water RWPR-AS-096
EST CST MST PST Time Zone (Circle):

×

Comments:						မ	PACK	QC PACKAGE (check below)
* Samples taken of 10/24/2012 were blown over by wind; 087 and 1080 were both found face down in did	10/2 2 June face	4/2012 w	ere blown	over by v	wind; 087 a		×	X LEVEL II (Standard QC)
			į			<u> </u>	-	EVEL III (Std QC + farms)
							1-1-	LEVEL IV (Std QC + forms + raw data)
3 of			•			1		(
Preservative Kev:	1	2-HNO3	3-H2SO4	4-NaOH	5-NaHSO4	7-Other	8-4 de	1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	7	Lar Street	02/Na/	1955
RECEIVED BY	TOC.	lawer Schmitz	2/0/11	16/2
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

ALS Laboratory Group

Chain-of-Custody

WORKORDER | 17 | 0 78

	ZZ6 COMMERCE LINYS, FOIL COMMS, COMMERCE COURTS TF: (800) 443-1611 PH: (970) 490-1611 FX: (970) 490-1622	1622							Form 202r8		12101
		SAMI	SAMPLER Lifes				L	DATE	02-Nov-12	PAGE 2	of 3
PROJECT NAME	PROJECT NAME Church Rock Phase	.8	SITE ID Churchrook	ırock				TURNAROUND	30 day	DISPOSAL By Lab or	r Return to Client
PROJECT No.	PROJECT No. SENES 350180-201 (400)	EDD FORMAT	MAT								
		PURCHASE OF	NDER Accou	PURCHASE ORDER Account Number 316126858	9858						
COMPANY NAME	SENES	BILL TO COMP	ANY SENE	BILL TO COMPANY SENES Consultants Limited	ited		_				
SEND REPORT TO	Darreil Liles	INVOICE ATT	INVOICE ATTN TO Andrea Pegg	Pegg			Γ				
ADDRESS	8310 S. Vailey Hwy., Suite 3014	ADDF	RESS 121 Gr	ADDRESS 121 Granton Dr., Unit #12	2		_				
CITY / STATE / ZIP	Englewood, CO 80112	CITY / STATE	/ ZIP Richm	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	3N4						
PHONE	PHONE (970) 420-8669	ā	PHONE (905) 764-9380	64-9380			_				
FAX			FAX (905) 764-9386	64-9386			<u> </u>				
E-MAIL	dilles@senesusa.com	ú	MAIL apequ	E-MAIL apegg@senes.ca							
Lab ID	Fied ID	Matrix	Sample Date	Sample	Sample Pres.	8 8					
					,		52-6FI	rot-u	Run Time (min)	Total Flow (#^3)	Comments
(=	RWPR-AS-097	ш	29/10/2012	. 1230	۲-	-	×	_ x	289	11560	٧
(Z)	RWPR-AS-098	ш	29/10/2012	1705		=	×	×	548	21920	
(5)	RWPR-AS-099	ш	29/10/2012	1651	.	<u>-</u>	×	×	513	23085	
(p)	RWPR-AS-100	IL.	30/10/2012	1655	~	=	×	×	505	20200	
	RWPR-AS-101	L	30/10/2012	1710	1	=	×	×	505	20200	
(<u>9</u> 1)	RWPR-AS-102	IL.	30/10/2012	1720	<u>-</u>	= .	×	×	499	19960	
$\widehat{\theta}$	RWPR-AS-103	ц	31/10/2012	1555	1	=	×	×	498	19920	
(g)	RWPR-AS-104	u,	31/10/2012	1610	-	=	×	×	498	19920	
	RWPR-AS-105	ь	31/10/2012	1624	1	=	×	×	502	20080	
(et)	RWPR-AS-106	ш	01/10/2012	1647	-	_	×	×	527	21080	
*Time Zone (Circle):	Time Zone (Circle): EST CST MST PST Matrix: O = 0il S = soil NS = non-soil solid W = water L = liquid E = extract F = filter	Sil NS = non-soil so	id W=water	. L = liquid E = e	extract F= fil	ě					

Transizine (orde): EST CST MST PST Metric O = 61 S= soll NS=non-soll solution was For metals or anions, please detail analytes below.

Comments: | Ocuments | Anot started at noon | X LEMEL 1(Started at noon | X LEMEL 1(Started

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1-HCI 2-HNO3 3-H2SO4

Chain-of-Custody	
ALS Laboratory Group	225 Commerce Drive, Fort Collins, Colorado 80524 TF- (RDD 443-1511 PH: 6970, 400-1511 FX: 6970) 400-1522

	225 Commerce Drive, Fort Collins, Colorado 80524 TF: (800) 443-1611 PH; (970) 490-1611 FX; (970) 490-1522	1622							-	Form 202r8	*	117	411049	
		SAMPI	SAMPLER LIIES			,			DATE	02-Nov-12	PAGE	ო	of 3	
PROJECT NAME	PROJECT NAME Church Rock Phase II	SIT	SITE ID Churchrook	ook				TUR	TURNAROUND	30 day	DISPOSAL	By Labor	Return to Client	
PROJECT No.	PROJECT No. SENES 350180-201 (400)	EDD FORMAT	JAT					L						
		PURCHASE ORDER Account Number 8/16/126858	DER Account	Number 816126	828									
COMPANY NAME	SENES	BILL TO COMP.	NN SENES	BILL TO COMPANY SENES Consultants Limited	ited									
SEND REPORT TO	Darrell Liles	INVOICE ATTIN TO Andrea Pegg	TO Andrea	2egg										
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDRI	SS 121 Grai	ADDRESS 121 Granton Dr., Unit #12	2									
CITY / STATE / ZIP	Englewood, CO 80112	CITY / STATE /	ZIP Richmor	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	3N4									
PHONE	PHONE (970) 420-8669	¥	PHONE (905) 764-9380	1-9380										
FAX			FAX (905) 764-9386	1-9386										
E-MAIL	dliles@senesusa.com	1	E-MAIL apegg@senes.ca	asenes.ca										
LabiD	Field 10	Matrix	Sample Date	Sample Time	Sample Pres.		9ZZ-E}	TOT-L	Sun F	Run Time (min)	Total Flow (ff-3)	(5-23)	Comments	
B	RWPR-AS-107	F 2	29/10/2012	1705	-		×	-		537	21480			
(n)	RWPR-AS-108	F 2	28/10/2012	1715	-		×	×		534	21360		В	
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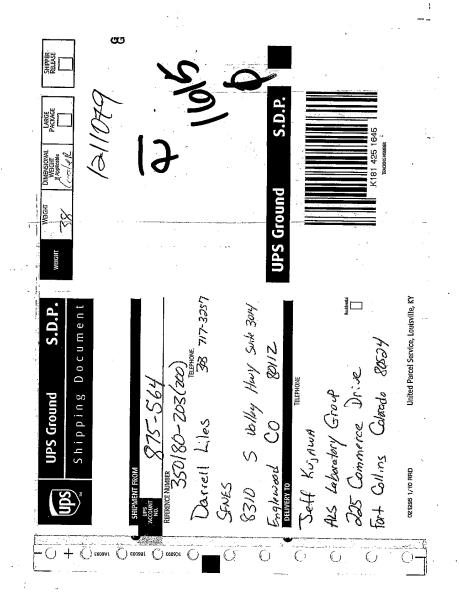
	SIGNATURE	PRINTED NAME	DATE	TIME
RELINGUISHED BY	1200	Karkara	02/Na	<i>እ>ረ!</i>
RECEIVED BY	Jak	Lauren Schmite	116/12	1615
RELINQUISHED BY				
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RELINQUISHED BY				
RECEIVED BY				

A

ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

(ALS)	`		10.11	0-10	1		
Client:	enes	Workorder No:	12011	070	<u> </u>	_	
Project Manager:	JPK	Initials:	LAS	Date:	11/6/1	2_	
1. Does this project require any specia	l handling in addition to standa	rd ALS procedures?			YES	(NO)	
2. Are custody seals on shipping c	ontainers intact?			NONE	YES	NO	ĺ
3. Are Custody seals on sample co	ntainers intact?			NONE	YES	NO	
4. Is there a COC (Chain-of-Custo	dy) present or other represen	tative documents?			YES	NO	
5. Are the COC and bottle labels of	omplete and legible?				YES	NO	
6. Is the COC in agreement with so containers, matrix, requested an		times, no. of samples	s, no. of		YES	NO	*
7. Were airbills / shipping docume	nts present and/or removable	e?		DROP OFF	YES) NO	
8. Are all aqueous samples requiring j	preservation preserved correctly	? (excluding volatiles)		(N/A)	YES	NO	
9. Are all aqueous non-preserved s			110000	(N/A)	YES	NO	
10. Is there sufficient sample for the	requested analyses?				(YES)	NO	
11. Were all samples placed in the	proper containers for the requ	uested analyses?			YES	NO	
12. Are all samples within holding	imes for the requested analy	ses?			(YES)	NO	
13. Were all sample containers rece	ived intact? (not broken or l	leaking, etc.)			YES	NO	
	* '	MEE, Rx CN/S, rado > green pea	n)	N/A)	YES	NO	
Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea > green pea Do any water samples contain sediment? Amount Amount of sediment: dusting moderate heavy Were the samples shipped on ice? Were cooler temperatures measured at 0.1-6.0°C? R gun used*: #2 #4 (ONLY) YES							
					YES	(NO)	
1 11	1 . 0 1 6 00 00	IR gun used*: #2	#4			\rightarrow	1
			.,,,	TONLIZ			
							1
1	,						1
DOT Survey/							
Information Background µR/h							1
Were external µR/hr readings ≤ two times t		VES /NO (N	A (TEuro nos	East 000			
Additional Information: PROVIDE	······································						j
\(\begin{align})C date = 10 = 10	11/12	Labo		(1 12 1 12 1 12	-
If applicable, was the client contacted?	es) no State A	Liles		Date/T:	me: _{(6-(t	-
Project Manager Signature / Date:	My Keye	11-6-11		_			
Form 201r24.xls (06/04/2012)	*IR Gun #2: Oakton, SN 2 *IR Gun #4: Oakton, SN				D 1		

Page 1 of 6 of 3



PAI 783 Rev 10 Method Blank Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: RE121109-1MB

Sample Matrix: FILTER

Prep Batch: RE121109-1 Prep SOP: PAI 783 Rev 10

QCBatchID: RE121109-1-1 Date Collected: 09-Nov-12 Run ID: RE121109-1A

Count Time: 15 minutes

Final Aliquot: 0.900 sample Result Units: pCi/sample File Name: Manual Entry

Date Analyzed: 16-Nov-12

Date Prepared: 09-Nov-12

CASI	O Tar	get Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-6	3-3	Ra-226	0.03 +/- 0.15	0.22	1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

M - Requested MDC not met

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

PAI 783 Rev 10 Method Blank Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: RE121109-2MB

Sample Matrix: FILTER

Prep SOP: PAI 783 Rev 10

Date Collected: 09-Nov-12

Date Prepared: 09-Nov-12
Date Analyzed: 16-Nov-12

Prep Batch: RE121109-2 QCBatchID: RE121109-2-1

Run ID: RE121109-2A Count Time: 15 minutes Final Aliquot: 0.900 sample Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	-0.03 +/- 0.20	0.41	1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

PAI 783 Rev 10

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: RE121109-1LCS

Sample Matrix: FILTER

Prep SOP: PAI 783 Rev 10

Date Collected: 09-Nov-12 Date Prepared: 09-Nov-12

Date Analyzed: 16-Nov-12

Prep Batch: RE121109-1

QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Count Time: 15 minutes

Final Aliquot: 0.900 sample Result Units: pCi/sample

File Name: Manual Entry

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	50.9 +/- 9.4	0.4	50.00	102	57 - 126	Р

Comments:

Qualifiers/Flags:

 $\ensuremath{\mathsf{U}}\xspace$ - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Data Package ID: RE1211079-1

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

Page 1 of 4

PAI 783 Rev 10

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: RE121109-1LCSD

Sample Matrix: FILTER

Prep SOP: PAI 783 Rev 10

Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A Final Aliquot: 0.900 sample Result Units: pCi/sample File Name: Manual Entry

Date Collected: 09-Nov-12 Date Prepared: 09-Nov-12

Count Time: 15 minutes Date Analyzed: 16-Nov-12

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	49.0 +/- 9.1	0.6	50.00	98.1	57 - 126	Р

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Data Package ID: RE1211079-1

Abbreviations:

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

PAI 783 Rev 10

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: RE121109-2LCS

Sample Matrix: FILTER

Prep SOP: PAI 783 Rev 10

QCBatchID: RE121109-2-1 Run ID: RE121109-2A Final Aliquot: 0.900 sample Result Units: pCi/sample File Name: Manual Entry

Date Collected: 09-Nov-12
Date Prepared: 09-Nov-12

Count Time: 15 minutes

Prep Batch: RE121109-2

Date Analyzed: 16-Nov-12	Date	Analyzed:	16-Nov-12	
--------------------------	------	-----------	-----------	--

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	50.5 +/- 9.3	0.3	50.00	101	57 - 126	Р

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Data Package ID: RE1211079-1

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

PAI 783 Rev 10

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: RE121109-2LCSD

Sample Matrix: FILTER

Prep SOP: PAI 783 Rev 10

QCBatchID: RE121109-2-1 Date Collected: 09-Nov-12 Run ID: RE121109-2A

Prep Batch: RE121109-2

Date Prepared: 09-Nov-12 Count Time: 15 minutes Date Analyzed: 16-Nov-12

Final Aliquot: 0.900 sample Result Units: pCi/sample

File Name: Manual Entry

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	52.4 +/- 9.7	0.2	50.00	105	57 - 126	Р

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Data Package ID: RE1211079-1

Abbreviations:

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

Page 4 of 4

PAI 783 Rev 10

Duplicate Sample Results (DER)

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: Lab ID: RE121109-1LCSD Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10

Date Collected: 09-Nov-12 Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-1 QCBatchID: RE121109-1-1

Run ID: RE121109-1A Count Time: 15 minutes

Final Aliquot: 0.900 sample Prep Basis: As Received

Moisture(%): NA Result Units: pCi/sample File Name: Manual Entry

CASNO	Analyte	Sample)		Duplicate		DER	DER	
	Allalyte	Result +/- 2 s TPU	MDC	Flags	Result +/- 2 s TPU	MDC	Flags		Lim
13982-63-3	Ra-226	50.9 +/- 9.4	0.4	Р	49.0 +/- 9.1	0.6	Р	0.144	2.13

Comments:

Duplicate Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13
- LT Result is less than Request MDC, greater than sample specific MDC
- M Requested MDC not met.
- M3 The requested MDC was not met, but the reported
- activity is greater than the reported MDC. L - LCS Recovery below lower control limit.
- H LCS Recovery above upper control limit.
- P LCS, Matrix Spike Recovery within control limits.
- N Matrix Spike Recovery outside control limits

Data Package ID: RE1211079-1

Abbreviations:

TPU - Total Propagated Uncertainty

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

PAI 783 Rev 10

Duplicate Sample Results (DER)

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: Lab ID: RE121109-2LCSD Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10

Date Collected: 09-Nov-12 Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-2 QCBatchID: RE121109-2-1

Run ID: RE121109-2A Count Time: 15 minutes

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Analyte	Sample)		Duplicate		DER	DER	
	Allalyte	Result +/- 2 s TPU	MDC	Flags	Result +/- 2 s TPU	MDC	Flags		Lim
13982-63-3	Ra-226	50.5 +/- 9.3	0.3	Р	52.4 +/- 9.7	0.2	Р	0.141	2.13

Comments:

Duplicate Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13
- LT Result is less than Request MDC, greater than sample specific MDC
- M Requested MDC not met.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L LCS Recovery below lower control limit.
- H LCS Recovery above upper control limit.
- P LCS, Matrix Spike Recovery within control limits.
- N Matrix Spike Recovery outside control limits

Data Package ID: RE1211079-1

Abbreviations:

TPU - Total Propagated Uncertainty

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-087

Lab ID: 1211079-1

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 24-Oct-12

Date Collected: 24-Oct-12 Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A Count Time: 15 minutes

Report Basis: As Received

Prep Basis: As Received Moisture(%): NA Result Units: pCi/sample File Name: Manual Entry

Final Aliquot: 0.900 sample

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.61 +/- 0.30	0.21	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-088

Lab ID: 1211079-2

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 24-Oct-12

Date Collected: 24-Oct-12
Date Prepared: 09-Nov-12
Date Analyzed: 16-Nov-12

Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A Count Time: 15 minutes

Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.40 +/- 0.28	0.34	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-089 Lab ID: 1211079-3

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 24-Oct-12

Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Prep Basis: As Received Moisture(%): NA Count Time: 15 minutes Result Units: pCi/sample File Name: Manual Entry Report Basis: As Received

Final Aliquot: 0.900 sample

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.85 +/- 0.39	0.33	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-090 Lab ID: 1211079-4

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 25-Oct-12

Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Count Time: 15 minutes Report Basis: As Received Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.45 +/- 0.25	0.21	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1211079-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-091 Lab ID: 1211079-5

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 26-Oct-12

Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Count Time: 15 minutes Report Basis: As Received Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.50 +/- 0.29	0.28	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1211079-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-092

Lab ID: 1211079-6

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 26-Oct-12

Date Prepared: 09-Nov-12
Date Analyzed: 16-Nov-12

Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Run ID: RE121109-1A Moisture(%): NA
Count Time: 15 minutes Result Units: pCi/sample
Report Basis: As Received File Name: Manual Entry

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

,	CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
	13982-63-3	Ra-226	0.40 +/- 0.35	0.51	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-093

Lab ID: 1211079-7

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10

Date Collected: 26-Oct-12

Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Count Time: 15 minutes
Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.50 +/- 0.34	0.44	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1211079-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-094 Lab ID: 1211079-8

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 27-Oct-12

Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Moisture(%): NA Count Time: 15 minutes Result Units: pCi/sample File Name: Manual Entry Report Basis: As Received

Final Aliquot: 0.900 sample

Prep Basis: As Received

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.60 +/- 0.30	0.26	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1211079-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-095 Lab ID: 1211079-9

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 27-Oct-12

Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Count Time: 15 minutes Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.77 +/- 0.35	0.23	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1211079-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-096 Lab ID: 1211079-10

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 27-Oct-12

Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Count Time: 15 minutes Report Basis: As Received Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.77 +/- 0.36	0.32	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1211079-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-097 Lab ID: 1211079-11

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 29-Oct-12

Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12

Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Prep Basis: As Received Moisture(%): NA Count Time: 15 minutes Result Units: pCi/sample File Name: Manual Entry Report Basis: As Received

Final Aliquot: 0.900 sample

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.21 +/- 0.30	0.49	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-098 Lab ID: 1211079-12

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 29-Oct-12

Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Moisture(%): NA Count Time: 15 minutes Result Units: pCi/sample File Name: Manual Entry Report Basis: As Received

Final Aliquot: 0.900 sample

Prep Basis: As Received

,	CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
	13982-63-3	Ra-226	0.55 +/- 0.29	0.27	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1211079-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-099

Lab ID: 1211079-13

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 29-Oct-12

Date Prepared: 09-Nov-12
Date Analyzed: 16-Nov-12

Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Run ID: RE121109-1A Moisture(%): NA
Count Time: 15 minutes Report Basis: As Received Moisture(%): NA
Result Units: pCi/sample
File Name: Manual Entry

Final Aliquot: 0.900 sample

Prep Basis: As Received

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.41 +/- 0.33	0.45	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-100

Lab ID: 1211079-14

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 30-Oct-12

Date Prepared: 09-Nov-12

Date Analyzed: 16-Nov-12

Rep

Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Run ID: RE121109-1A Moistu
Count Time: 15 minutes Result
Report Basis: As Received File

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.41 +/- 0.35	0.51	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty
- MDC Minimum Detectable Concentration
- BDL Below Detection Limit

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-101 Lab ID: 1211079-15

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 30-Oct-12

Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Prep Basis: As Received Moisture(%): NA Count Time: 15 minutes Result Units: pCi/sample File Name: Manual Entry Report Basis: As Received

Final Aliquot: 0.900 sample

	CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
1	13982-63-3	Ra-226	0.03 +/- 0.24	0.45	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1211079-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-102 Lab ID: 1211079-16

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 30-Oct-12

Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12

Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A Count Time: 15 minutes

Prep Basis: As Received Moisture(%): NA Result Units: pCi/sample File Name: Manual Entry Report Basis: As Received

Final Aliquot: 0.900 sample

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.33 +/- 0.22	0.22	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1211079-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-103

Lab ID: 1211079-17

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 31-Oct-12

Date Prepared: 09-Nov-12

Date Analyzed: 16-Nov-12

Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Run ID: RE121109-1A No. Count Time: 15 minutes Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.09 +/- 0.33	0.59	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.
- M The requested MDC was not me

Abbreviation:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1211079-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-104

Lab ID: 1211079-18

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 31-Oct-12

Date Prepared: 09-Nov-12

Date Analyzed: 16-Nov-12

Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Count Time: 15 minutes
Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.55 +/- 0.30	0.27	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbroviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-105 Lab ID: 1211079-19

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 31-Oct-12

Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Moisture(%): NA Count Time: 15 minutes Result Units: pCi/sample File Name: Manual Entry Report Basis: As Received

Final Aliquot: 0.900 sample

Prep Basis: As Received

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.09 +/- 0.22	0.40	1	U

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1211079-1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-106

Lab ID: 1211079-20

Sample Matrix: FILTER
Prep SOP: PAI 783 Rev 10
Date Collected: 01-Nov-12

Date Collected: 01-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 16-Nov-12

Prep Batch: RE121109-1 QCBatchID: RE121109-1-1 Run ID: RE121109-1A

Run ID: RE121109-1A M.
Count Time: 15 minutes Report Basis: As Received

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.49 +/- 0.30	0.33	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Ra-226 by Radon Emanation - Method 903.1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-107

Lab ID: 1211079-21

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10 Date Collected: 01-Nov-12

Date Prepared: 09-Nov-12
Date Analyzed: 16-Nov-12

Prep Batch: RE121109-2 QCBatchID: RE121109-2-1 Run ID: RE121109-2A

Run ID: RE121109-2A Moisture
Count Time: 15 minutes Result U
Report Basis: As Received File N

Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.36 +/- 0.24	0.22	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

·

Abbreviation:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1211079-1

Date Printed: Monday, November 26, 2012

Ra-226 by Radon Emanation - Method 903.1

PAI 783 Rev 10 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211079

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: RWPR-AS-108 Lab ID: 1211079-22

Sample Matrix: FILTER Prep SOP: PAI 783 Rev 10

Date Collected: 01-Nov-12 Date Prepared: 09-Nov-12 Date Analyzed: 16-Nov-12 Prep Batch: RE121109-2 QCBatchID: RE121109-2-1 Run ID: RE121109-2A

Count Time: 15 minutes Report Basis: As Received Final Aliquot: 0.900 sample Prep Basis: As Received Moisture(%): NA

Result Units: pCi/sample File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.43 +/- 0.25	0.21	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: RE1211079-1

Date Printed: Monday, November 26, 2012

QUALITY ASSURANCE SUMMARY SHEET

	ALS W.O. #/BATCH 1211079
	TEST Ra-226, Melas
	METHOD prep
	SOP/REV (PREP)
	SOP/REV (ANAL)
san sch	efly document any QA or other problems or deviations associated with the analysis of nples. Problems could result from: log-in, color, odor, dilution, consistency, leduling, equipment, or instrumentation, or may include documentation of minor viations necessary due to unique DQO's or sample characteristics.
1.	Samples in work order 1211079 consisted of large glass fiber filters to be analyzed for Ra226 and Metals. The samples were placed into plastic cups and digested by adding 50 mL nitric acid, and 50 mL hydrochloric acid. At this time a MB was created. After drying the digestions on the hotblock, 10 ml nitric acid and ~90 ml DI water were added. The samples were filtered through fluted qualitative filter paper and brought to a volume of 100 mL with DI water. Samples were then split for appropriate tests.
2. V	The digestate is a common solution for multiple analyses. Tracing and spiking was performed after the appropriate aliquot was taken from the common digestate for the analysis of Ra-226 and Metals. This reduces the potential for interferences caused by the different matrices used in the tracing and spiking solutions.
3.	Per project manager, aliquots were taken as listed below. Metals 10 ml or .1 sample equivalent Ra226 90 ml or .9 sample equivalent
	The following equation was used to calculate the filter equivalent:
	Sample Equivalent $(x) = \frac{\text{(Digestate volume taken for analysis)}}{\text{(Total volume of digestate)}}$
	11)8/12 8-3
TEC	CHNICIAN/ANALYST Mr. Island DATE 11/8/12
	MO wholes
DE)	PARTMENT MANAGER DATE 11/8/12

FORM 302r6.doc (4/22/04)





Gamma Spectroscopy Case Narrative

SENES Consultants Limited

Church Rock Phase II – SENES 350180-203

Work Order Number: 1211066

- The following report consists of analytical results for 19 soil samples received by ALS on 11/06/2012.
- 2. These samples were prepared according to the current revision of SOP 739. The samples were sealed in steel cans on 11/09/2012 and stored for at least 21 days to allow ²²²Rn to approach secular equilibrium with its parent, ²²⁶Ra. The degree of in-growth achieved prior to analysis on 11/30/2012 is at least 97.8%. Conservatively assuming a radon emanation efficiency of approximately 50%, the effective radon progeny in-growth for these samples would be greater than 98.9%.
- 3. The samples were analyzed for the presence of gamma emitting radionuclides according to the current revision of SOP 713. The analyses were completed on 11/30/2012.
- 4. The results for these samples are reported on a "Dry Weight" basis in units of pCi/gram.
- Sample volumes were insufficient to allow preparation of duplicates. A duplicate analysis of samples 1211066-18 and -19 was performed in lieu of prepared duplicates.
- 6. ALS has observed a reproducible low bias in ²²⁶Ra results (about -30% for the geometry in question) when using a mixed gamma source for the calibration of HPGe detectors for solid samples. This bias is eliminated by calibration using a NIST traceable ²²⁶Ra source in the same geometry and configuration as the samples.
- 7. The library used for calibration and analysis employs multiple peaks for the ²²⁶Ra progeny, ²¹⁴Pb (352 and 295 keV) and ²¹⁴Bi (609 and 1120 keV). Using these peaks avoids the use of the problematic ²²⁶Ra photo-peak at 186 keV, which suffers from poorly resolvable interference from ²³⁵U at the same energy. Final activity results for ²²⁶Ra are calculated, using the uncertainty-weighted mean of the activities for the four photo-peaks, by the Seeker gamma spectroscopy software assuming secular equilibrium.



- 8. There are cases where the sample density is less than the associated calibration standard density. Cases that exceed the limit of +/- 15% of the density of the calibration standard are flagged with a 'G', denoting a significant density difference between the sample and calibration standard. Consequently, the results may be biased high for the flagged results in this work order. If requested, ALS can perform a transmission spike in order to estimate a magnitude of this bias. The results are reported without further qualification.
- 9. No further problems were encountered with either the client samples or the associated quality control samples. All remaining quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Linda Arend

1

Radiochemistry-Primary, Data Reviewer

Radiochemistry Final Data Reviewer

Date

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1211066

Client Name: SENES Consultants Limited Client Project Name: Church Rock Phase II Client Project Number: SENES 350180-203

Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
RWU3-008	1211066-1		SOIL	02-Nov-12	13:30
RWU3-102	1211066-2		SOIL	02-Nov-12	13:35
RWU3-011	1211066-3		SOIL	02-Nov-12	13:47
RWU2-010	1211066-4		SOIL	02-Nov-12	14:15
RWU2-012	1211066-5		SOIL	02-Nov-12	14:32
RWU2-009	1211066-6		SOIL	02-Nov-12	15:00
RWU3-006	1211066-7		SOIL	25-Oct-12	15:32
RWU3-001	1211066-8		SOIL	30-Oct-12	11:13
RWU3-003	1211066-9		SOIL	30-Oct-12	11:47
RWU2-013	1211066-10		SOIL	31-Oct-12	14:25
RWU2-011	1211066-11		SOIL	31-Oct-12	15:01
RWU2-012	1211066-12		SOIL	31-Oct-12	15:15
RWU2-010	1211066-13		SOIL	31-Oct-12	16:00
RWU2-007	1211066-14		SOIL	01-Nov-12	10:13
RWU2-008	1211066-15		SOIL	01-Nov-12	10:35
RWU2-102	1211066-16		SOIL	01-Nov-12	10:51
RWU2-009	1211066-17	_	SOIL	01-Nov-12	11:21
RWU2-005	1211066-18		SOIL	01-Nov-12	11:46
RWU2-101	1211066-19		SOIL	01-Nov-12	12:15



ALS Laboratory Group

Chain-of-Custody

WORKORDER

	225 Commerce Drive, Fort Collins, Colorado 80524	4				**	10	10110116
	TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522	90-1522			Form 202r8		-	266
		SAMPLER	Liles/Stager/Wilson	DATE	02-Nov-12	PAGE	1	of 1
PROJECT NAME	PROJECT NAME Church Rock Phase II	SITEID	Church Rock	TURNAROUND	30 day	DISPOSAL	By Lab or	DISPOSAL By Lab or Return to Client
PROJECT No.	PROJECT No. SENES 350180-203 (200)	EDD FORMAT						
		PURCHASE ORDER	PURCHASE ORDER Account Number 816/126858					
COMPANY NAME	SENES	BILL TO COMPANY	BILL TO COMPANY SENES Consultants Limited					
SEND REPORT TO	Darrell Liles	INVOICE ATTN TO Andrea Pegg	Andrea Pegg					
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDRESS	ADDRESS 121 Granton Dr., Unit #12					
CITY / STATE / ZIP	Englewood, CO 80112	CITY / STATE / ZIP	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4					
PHONE	PHONE (303) 521-1406	PHONE	PHONE (905) 764-9380					
FAX		FAX	FAX (905) 764-9386					
E-MAIL	diles@senesusa.com	E-WAIL	apegg@senes.ca					

Ra-226

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= =

> 1347 1415

> 02/11/2012 02/11/2012

1335

02/11/2012

Soil Soil

1330

02/11/2012

RWU3-008

RWU3-102

RWU3-011 RWU2-010

8

Sample Date

Field ID

LabID

1500 1432 02/11/2012 02/11/2012 Soil Soil RWU2-012 RWU2-009 300 EV ھ

Time Zone (Circle): EST CST MST PST Matrix 0 = oil
For metals or anions, please detail analytes below.

QC PACKAGE (check below)

0001 11/0/13 Lauren Schmite Carlor Talves RECINQUISHED BY
RECINQUISHED BY
RELINQUISHED BY
RECIVED BY RELINQUISHED BY

TIME

DATE

PRINTED NAME

Preservative Key:

1-HCI 2-HNO3 3-H2SD4 4-NaOH 5-NaHSD4 7-Other 8-4 degrees C 9-5035

ALS Laboratory Group

Chain-of-Custody

225 Commerce Drive, Fort Collins, Colorado 80524 TF: (300) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

	225 Commerce Drive, Fort Collins, Colorado 80524 TF: (300) 443-1611 PH: (970) 490-1611 FX: (970) 490-1522	F1622							Form 202r8	#	1211066	101	e
(SIE		SAMPLER	SAMPLER Liles/Stager/Wilson				DATE		02-Nov-12	PAGE	-	ğ	2
PROJECT NAME	PROJECT NAME Church Rock Phase II	SITEID	Church Rock			F	TURNAROUND		30 day	DISPOSAL	By Lab or	- 1	Refurn to Client
PROJECT No.	SENES 350180-203 (200)	EDD FORMAT											
		PURCHASE ORDER	PURCHASE ORDER Account Number 816126858	6126858									
COMPANY NAME	SENES	BILL TO COMPANY	BILL TO COMPANY SENES Consultants Limited	Limited			-						
SEND REPORT TO	Darrell Liles	INVOICE ATTN TO Andrea Pegg	Andrea Pegg				•						
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDRESS	ADDRESS 121 Granton Dr., Unit #12	t #12									••
CITY/STATE/ZIP	Englewood, CO 80112	CITY / STATE / ZIP	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	4B 3N4			_						·
PHONE	(303) 521-1406	PHONE	(905) 764-9380										
FAX		KAR	FAX (905) 764-9386										
E-MAIL	dilles@senesusa.com	E-MAIL.	apegg@senes.ca										
Lab ID	Eled ID	Matrix Sa	Sample Sample Date Time	# Sample Pres.	res.								
			1			ZZ-67							
(4)	RWU3-006	Soll 25/1	25/10/2012 1532	1	II	×							
8	RWU3-001	Soil 30/1	30/10/2012 1113	1	П	×							
6	RWU3-003	Soil 30/1	30/10/2012 1147	1	=	×							
Œ	RWU2-013	Soil 31/1	31/10/2012 1425	-	=	×							
(RWU2-011	Soil 31/1	31/10/2012 1501	1	=	×							
(2)	RWU2-012	Soil 31/7	31/10/2012 1515	-	=	×							
(3)	RWU2-010	Soil 31/7	31/10/2012 1600	-	=	×							1
(†)	RWU2-007	Soil 01/7	01/11/2012 1013	-	=	×							
(S)	RWU2-008	Soil 01/7	01/11/2012 1035	-	=	×							
(3)	RWU2-102	Soil 01/	01/11/2012 1051	1	=	×						_	
*Time Zone (Circle):	Time Zone (Circle): EST CST MST PST Matrix O=oil S≃so	il NS≈ non-soil solid	Matrix: O = oil S ≈ soil NS ≈ non-soil solid W ≈ water L = liquid E = extract F ≈ filter	= extract F≈f	lter								
For metals or an	For metals or anions, please detail analytes below.						SIGNATURE	URE	N. C.	PRINTED NAME	DATE	<u>u</u>	TIME
Comments:		QC PACKAGE	QC PACKAGE (check below)	RELIN	RELINQUISHED BY	Ì	7	3	43/		02/ND	707	550
	1	į	0		0 000000	7	/	(1	Se Labora	アイトーグ	7	

5 of 33

Preservative Key:

1000

1/4/12

Lauren Schmitz

RELINQUISHED BY
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RECEIVED BY
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RECEIVED BY
RECEIVED BY

7-Other 8-4 degrees C 9-5035

1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4

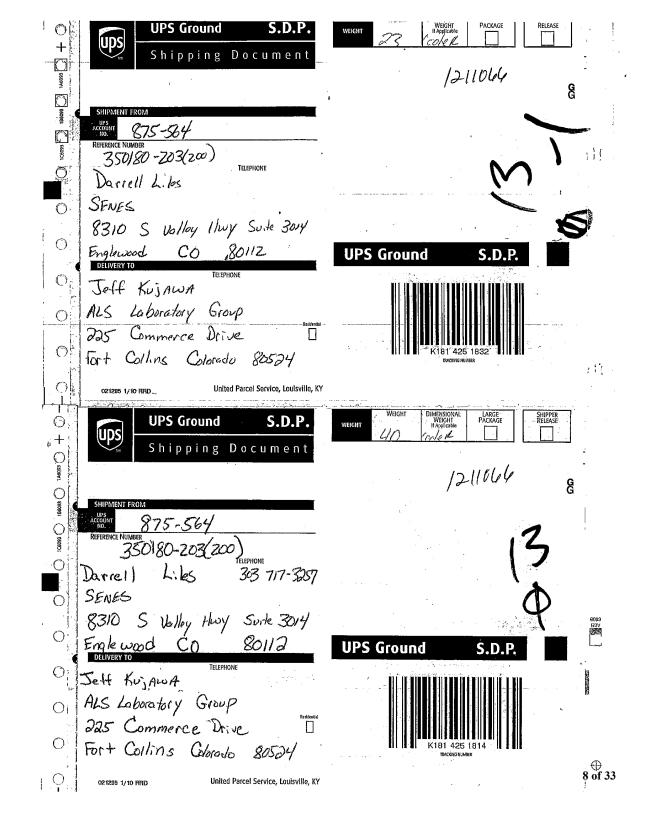
	ALS Laboratory Group				Chain-or-Custody	5	stod	>					and CVICON		•	•	•
	225 Commerce Drive, Fort Collins, Colorado 80524 TP: (800) 443-1511 PH: (870) 490-1511 FX: (870) 490-1522	74 1522										Form 202r8	1211066	<u> </u>	57	O	e
,		SAM	SAMPLER Liles/Stager/Wilson	agenWilson					DATE		02-Nov-12	-12	PAGE		~	5	2
PROJECT NAME Church	Church Rock Phase II	5	SITE ID Church Rock	Rock				TURNAROUND	OUND		30 day	á	DISPOSAL	_	By Lab or		Return to Client
PROJECT No. SENES	SENES 350180-203 (200)	EDD FORMAT	RMAT					-									
		PURCHASEO	PURCHASE ORDER Account Number 816126858	t Number 8161	26858												
COMPANY NAME	SENES	BILL TO COM	BILL TO COMPANY SENES Consultants Limited	Consultants Li	imited		Г										
SEND REPORT TO	Darrell Liles	INVOICE ATT	INVOICE ATTN TO Andrea Pegg	Pegg				•••									
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADD	ADDRESS 121 Granton Dr., Unit #12	inton Dr., Unit #	#12			•									
CITY / STATE / ZIP	Englewood, CO 80112	CITY / STATE	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	nd Hill, ON L4E	B 3N4		1										
PHONE	PHONE (303) 521-1406	ā	PHONE (905) 764-9380	-9380													
FAX			FAX (905) 764-9386	34-9386											•		
E-MAIL	dliles@senesusa.com	ú	E-MAIL apegg@senes.ca	@senes.ca			T -					_					
Lab ID	Ot Pied.	Matrix	Sample Date	Sample Time	Sample Pres.	ဗ	Ra-226										
(1)	RWUZ-009	Soil	01/11/2012	1121	-	=	×	-									
(8)	RWU2-005	Soil	01/11/2012	1146	τ-	=	×	-	_								
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Comments:		QC PACKA	QC PACKAGE (check below)	[_	RELINQUISHED BY	ISHED B	 -	1	1	6	1	C	- Are		02/12		120
									(•						

Nauvenschmit 11/1/12



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Senes Workorder No:	121100	06	_
Project Manager: JRK Initials:	LAS Date:	11/0/10	_
Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2. Are custody seals on shipping containers intact?	NONE	YES	NO
3. Are Custody seals on sample containers intact?	NONE) YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
5. Are the COC and bottle labels complete and legible?		YES	NO
6 Is the COC in agreement with samples received? (IDs, dates, times, no. of samples containers, matrix, requested analyses, etc.)	s, no. of	YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
8 Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
10. Is there sufficient sample for the requested analyses?		(YES)	NO
Were all samples placed in the proper containers for the requested analyses?		YES	NO
12. Are all samples within holding times for the requested analyses?		YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		(YES)	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, rador headspace free? Size of bubble: < green pea > green pea	n) N/A	YES	NO
15. Do any water samples contain sediment? At	nount	MDG	
Amount of sediment: dusting moderateheavy	(N/A)	YES	NO
16. Were the samples shipped on ice?		YES	(ÑÕ)
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2	#4 (RAD)	YES	(NO)
Cooler #: 1 2	TO THE PARTY OF TH		
Temperature (°C): AMB AMB		-	
No. of custody seals on cooler:			
DOT Survey			
Acceptance Information External μR/hr reading: 13 13 13 13 15 15 15 15 15 15 15 15 15 15 15 15 15			$\overline{}$
	(If no see Forms 000)		
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION.	(If no, see Form 008.		
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION.	ABOVE, EXCEPT #17	MD #10.	
(41) 10.11.01.12-19 has 10 no 000 - 001112-011	(d ade - 1)	(16)	
(*6) 1211066-19 has ID on COC = RWUZ-011 on bag label = RWUZ-101	(date=11)	/11/2	
on bug label - RW42-101	(aute=11	(1(10)	
		11	()
If applicable, was the client contacted YES / NO / NA Contact:	Date/T	ime: [[C	9 · W
Project Manager Signature / Date:			
Walls Out the Outleton ON consequence and			
Form 201r24.xls (06/04/2012) *IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002			
		Page 1	
			7



PAI 713 Rev 12 **Method Blank Results**

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: GS121107-3MB

Sample Matrix: SOIL

Prep Batch: GS121107-3 Prep SOP: PAI 739 Rev 10 QCBatchID: GS121107-3-1

Run ID: GS121107-3A

Final Aliquot: 215 g Result Units: pCi/g File Name: 120147d03

Library: RA226.LIB

Date Collected: 09-Nov-12 Date Prepared: 09-Nov-12 Date Analyzed: 30-Nov-12

Count Time: 30 minutes

	CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
Ì	13982-63-3	Ra-226	-0.11 +/- 0.19	0.39	1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Date Printed: Wednesday, December 05, 2012

Data Package ID: GSS1211066-1

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

PAI 713 Rev 12

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: GS121107-3LCS

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Final Aliquot: 215 g Result Units: pCi/g File Name: 121985d04

Library: RA226.LIB

Date Collected: 09-Nov-12 Date Prepared: 09-Nov-12 Run ID: GS121107-3A Count Time: 30 minutes

Date Analyzed: 30-Nov-12

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	454 +/- 53	3	469.4	96.7	85 - 115	P,M3

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

P - LCS Recovery within control limits.

L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

Data Package ID: GSS1211066-1

Date Printed: Wednesday, December 05, 2012

ALS Environmental -- FC

Page 1 of 1

LIMS Version: 6.625

PAI 713 Rev 12

Duplicate Sample Results (DER)

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-005 Lab ID: 1211066-18DUP Library: RA226.LIB

Ra-226

CASNO

13982-63-3

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 01-Nov-12 Date Prepared: 09-Nov-12

Date Analyzed: 30-Nov-12

1.69 +/- 0.37

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A Count Time: 30 minutes

Report Basis: Dry Weight

1.83 +/- 0.38

Final Aliquot: 189 q Prep Basis: Dry Weight Moisture(%): NA Result Units: pCi/g

File Name: 121720d01

0.265

2.13

Sample DER DER **Duplicate** Analyte Result +/- 2 s TPU MDC Flags Result +/- 2 s TPU MDC Flags Lim 0.53

0.60

Comments:

Duplicate Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13
- LT Result is less than Request MDC, greater than sample specific MDC
- M Requested MDC not met.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L LCS Recovery below lower control limit.
- H LCS Recovery above upper control limit.
- N Matrix Spike Recovery outside control limits
- P LCS, Matrix Spike Recovery within control limits.

- TPU Total Propagated Uncertainty DER - Duplicate Error Ratio
 - BDL Below Detection Limit NR - Not Reported

Abbreviations:

G - Sample density differs by more than 15% of LCS density.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

Data Package ID: GSS1211066-1

Date Printed: Wednesday, December 05, 2012

ALS Environmental -- FC

Page 1 of 2

PAI 713 Rev 12

Duplicate Sample Results (DER)

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-101 Lab ID: 1211066-19DUP Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 01-Nov-12 Date Prepared: 09-Nov-12

Date Analyzed: 30-Nov-12

QCBatchID: GS121107-3-1 Run ID: GS121107-3A Count Time: 30 minutes Report Basis: Dry Weight

Prep Batch: GS121107-3

Final Aliquot: 184 q Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121707d02

CASNO	Analyte	Sample	9		Duplica	ate		DER	DER
	Allalyte	Result +/- 2 s TPU	MDC	Flags	Result +/- 2 s TPU	MDC	Flags		Lim
13982-63-3	Ra-226	2.01 +/- 0.37	0.46		1.75 +/- 0.34	0.51		0.493	2.13

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits. W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit. P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative. R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1211066-1

TPU - Total Propagated Uncertainty DER - Duplicate Error Ratio BDL - Below Detection Limit

NR - Not Reported

Abbreviations:

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-008

Lab ID: 1211066-1

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 02-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Run ID: GS121107-3A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 198 g
Prep Basis: Dry Weight
Moisture(%): NA

Moisture(%): NA Result Units: pCi/g File Name: 121705d02

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.79 +/- 0.33	0.41	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

Date Printed: Wednesday, December 05, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-102 Lab ID: 1211066-2

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 02-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Run ID: GS121107-3A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 192 g
Prep Basis: Dry Weight
Moisture(%): NA

Moisture(%): NA
Result Units: pCi/g
File Name: 120145d03

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.49 +/- 0.33	0.53	1	

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty

 MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211066-1

Date Printed: Wednesday, December 05, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-011 Lab ID: 1211066-3

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 02-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 193 g
Prep Basis: Dry Weight
Moisture(%): NA

Result Units: pCi/g File Name: 121983d04

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.28 +/- 0.31	0.45	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-010 Lab ID: 1211066-4

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 02-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3

QCBatchID: GS121107-3-1

Run ID: GS121107-3A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 201 g Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121331d05

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.20 +/- 0.25	0.33	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-012 Lab ID: 1211066-5

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 02-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 177 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121448d06

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.17 +/- 0.33	0.60	1	G

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty

 MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211066-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-009
Lab ID: 1211066-6

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 02-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Run ID: GS121107-3A
Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 197 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g

File Name: 121466d07

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.37 +/- 0.30	0.43	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-006
Lab ID: 1211066-7
Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10

Date Collected: 25-Oct-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Run ID: GS121107-3A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 199 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121629d08

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.62 +/- 0.32	0.46	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-001 Lab ID: 1211066-8

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 30-Oct-12 Date Prepared: 09-Nov-12 Date Analyzed: 30-Nov-12 Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 183 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121476d09

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.75 +/- 0.37	0.54	1	

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation:

- TPU Total Propagated Uncertainty

 MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211066-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC
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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-003 Lab ID: 1211066-9

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 30-Oct-12 Date Prepared: 09-Nov-12 Date Analyzed: 30-Nov-12 Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Run ID: GS121107-3A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 181 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121453d10

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.32 +/- 0.30	0.43	1	G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-013 Lab ID: 1211066-10

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 31-Oct-12 Date Prepared: 09-Nov-12

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A Count Time: 30 minutes

Date Analyzed: 30-Nov-12 Report Basis: Dry Weight Final Aliquot: 196 g Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121719d01

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.09 +/- 0.29	0.45	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

Date Printed: Wednesday, December 05, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-011 Lab ID: 1211066-11

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 31-Oct-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 198 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121706d02

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.14 +/- 0.25	0.34	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

Date Printed: Wednesday, December 05, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-012 Lab ID: 1211066-12

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 31-Oct-12 Date Prepared: 09-Nov-12 Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1

Run ID: GS121107-3A Count Time: 30 minutes Report Basis: Dry Weight

Final Aliquot: 192 g Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 120146d03

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.86 +/- 0.26	0.50	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

- TPU Total Propagated Uncertainty MDC - Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211066-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-010

Lab ID: 1211066-13

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 31-Oct-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3

QCBatchID: GS121107-3-1

Run ID: GS121107-3-A
Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 198 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121984d04

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.31 +/- 0.30	0.49	1	

Comments:

Qualifiers/Flags:

- $\ensuremath{\mathsf{U}}\xspace$ Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty

 MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211066-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.

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G - Sample density differs by more than 15% of LCS density.

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-007 Lab ID: 1211066-14

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 01-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Run ID: GS121107-3A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 205 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121332d05

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.89 +/- 0.21	0.34	1	LT

Comments:

Qualifiers/Flags:

- $\ensuremath{\mathsf{U}}\xspace$ Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty
- MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211066-1

Date Printed: Wednesday, December 05, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-008
Lab ID: 1211066-15

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 01-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Run ID: GS121107-3A
Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 171 g
Prep Basis: Dry Weight
Moisture(%): NA

Result Units: pCi/g File Name: 121449d06

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.26 +/- 0.36	0.68	1	G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-102
Lab ID: 1211066-16
Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 01-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3

QCBatchID: GS121107-3-1

Pun ID: GS121107-3A

Run ID: GS121107-3A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 177 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121467d07

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.04 +/- 0.28	0.45	1	G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.

LIMS Version: 6.625

G - Sample density differs by more than 15% of LCS density.

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-009

Lab ID: 1211066-17

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 01-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Run ID: GS121107-3A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 199 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121630d08

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.68 +/- 0.33	0.42	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-005 Lab ID: 1211066-18

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 01-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Run ID: GS121107-3A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 189 g
Prep Basis: Dry Weight
Moisture(%): NA

Result Units: pCi/g
File Name: 121477d09

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.69 +/- 0.37	0.60	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.

LIMS Version: 6.625

G - Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC Page 18 of 19

PAI 713 Rev 12 Sample Duplicate Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-005

Lab ID: 1211066-18DUP

Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Final Aliquot: 189 g
Prep Basis: Dry Weight
Moisture(%): NA

Date Collected: 01-Nov-12 Date Prepared: 09-Nov-12 Date Analyzed: 30-Nov-12

Count Time: 30 minutes
Report Basis: Dry Weight

Result Units: pCi/g File Name: 121720d01

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.83 +/- 0.38	0.53	1	

Comments:

Qualifiers/Flags:

- $\,$ U $\,$ Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits. LT - Result is less than Requested MDC,
- $\ensuremath{\mathsf{LT}}$ Result is less than Requested MDC, greater than sample specific MDC.
- M The requested MDC was not met.
- M3 The requested MDC was not met, but thereported activity is greater than the reported MDC.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13

Abbreviations

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

Date Printed: Wednesday, December 05, 2012

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-101 Lab ID: 1211066-19

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 01-Nov-12 Date Prepared: 09-Nov-12

QCBatchID: GS121107-3-1 Run ID: GS121107-3A Count Time: 30 minutes Date Analyzed: 30-Nov-12 Report Basis: Dry Weight

Prep Batch: GS121107-3 Final Aliquot: 184 g Prep Basis: Dry Weight Moisture(%): NA

Result Units: pCi/g File Name: 121454d10

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	2.01 +/- 0.37	0.46	1	

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

- TPU Total Propagated Uncertainty
- MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211066-1

Date Printed: Wednesday, December 05, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

Page 19 of 19 ALS Environmental -- FC

LIMS Version: 6.625

PAI 713 Rev 12 Sample Duplicate Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211066

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-101

Lab ID: 1211066-19DUP

Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 01-Nov-12 Prep Batch: GS121107-3 QCBatchID: GS121107-3-1 Run ID: GS121107-3A

Final Aliquot: 184 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g

Date Prepared: 09-Nov-12 Date Analyzed: 30-Nov-12 Count Time: 30 minutes
Report Basis: Dry Weight

File Name: 121707d02

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.75 +/- 0.34	0.51	1	

Comments:

Qualifiers/Flags:

- $\,$ U $\,$ Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits. LT - Result is less than Requested MDC,
- $\ensuremath{\mathsf{LT}}$ Result is less than Requested MDC, greater than sample specific MDC.
- M The requested MDC was not met.
- M3 The requested MDC was not met, but thereported activity is greater than the reported MDC.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211066-1

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Date Printed: Wednesday, December 05, 2012



Gamma Spectroscopy Case Narrative

SENES Consultants Limited

Church Rock Phase II – SENES 350180-203

Work Order Number: 1211078

- The following report consists of analytical results for 13 soil samples received by ALS on 11/06/2012.
- 2. These samples were prepared according to the current revision of SOP 739. The samples were sealed in steel cans on 11/09/2012 and stored for at least 21 days to allow ²²²Rn to approach secular equilibrium with its parent, ²²⁶Ra. The degree of in-growth achieved prior to analysis on 11/30/2012 is at least 97.8%. Conservatively assuming a radon emanation efficiency of approximately 50%, the effective radon progeny in-growth for these samples would be greater than 98.9%.
- 3. The samples were analyzed for the presence of gamma emitting radionuclides according to the current revision of SOP 713. The analyses were completed on 11/30/2012.
- 4. The results for these samples are reported on a "Dry Weight" basis in units of pCi/gram.
- Sample volumes were insufficient to allow preparation of duplicates. A duplicate analysis of samples 1211078-3 and -5 was performed in lieu of prepared duplicates.
- 6. ALS has observed a reproducible low bias in ²²⁶Ra results (about -30% for the geometry in question) when using a mixed gamma source for the calibration of HPGe detectors for solid samples. This bias is eliminated by calibration using a NIST traceable ²²⁶Ra source in the same geometry and configuration as the samples.
- 7. The library used for calibration and analysis employs multiple peaks for the ²²⁶Ra progeny, ²¹⁴Pb (352 and 295 keV) and ²¹⁴Bi (609 and 1120 keV). Using these peaks avoids the use of the problematic ²²⁶Ra photo-peak at 186 keV, which suffers from poorly resolvable interference from ²³⁵U at the same energy. Final activity results for ²²⁶Ra are calculated, using the uncertainty-weighted mean of the activities for the four photo-peaks, by the Seeker gamma spectroscopy software assuming secular equilibrium.



- 8. There are cases where the sample density is less than the associated calibration standard density. Cases that exceed the limit of +/- 15% of the density of the calibration standard are flagged with a 'G', denoting a significant density difference between the sample and calibration standard. Consequently, the results may be biased high for the flagged results in this work order. If requested, ALS can perform a transmission spike in order to estimate a magnitude of this bias. The results are reported without further qualification.
- No further problems were encountered with either the client samples or the associated quality control samples. All remaining quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Linda Arend

Date

Radiochemistry Primary Data Reviewer

Radiochemistry Final Data Reviewer

12-05-1

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1211078

Client Name: SENES Consultants Limited

Client Project Name: Church Rock Phase II Client Project Number: SENES 350180-203

Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
RWU2-004	1211078-1		SOIL	01-Nov-12	17:07
RWU2-002	1211078-2		SOIL	01-Nov-12	17:38
RWU2-001	1211078-3		SOIL	01-Nov-12	17:55
RWU3-015	1211078-4		SOIL	01-Nov-12	18:05
RWU3-014	1211078-5		SOIL	01-Nov-12	18:15
RWU2-003	1211078-6		SOIL	02-Nov-12	7:50
RWU2-014	1211078-7		SOIL	02-Nov-12	8:20
RWU3-013	1211078-8		SOIL	02-Nov-12	9:31
RWU3-002	1211078-9		SOIL	02-Nov-12	12:55
RWU3-004	1211078-10		SOIL	02-Nov-12	13:10
RWU3-005	1211078-11	<u> </u>	SOIL	02-Nov-12	13:30
RWU3-007	1211078-12		SOIL	02-Nov-12	16:47
RWU3-101	1211078-13		SOIL	02-Nov-12	17:15

Page 1 of 1

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ALS Laboratory Group

Chain-of-Custody

225 Commerce Drive, Fort Collins, Colorado 80524 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

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PROJECT NAME	PROJECT NAME Church Rock Phase	IT.IS	SITE ID Church Rock	tock			TURNAROUND	30 day	DISPOSAL	By Lab or	Return to Client	tie
PROJECT No.	PROJECT No. SENES 350180-203 (200)	EDD FORMAT	/AT									
		PURCHASE ORDER Account Number 816126858	JER Account	Number 81612	858				-			•
COMPANY NAME	SENES	BILL TO COMPANY SENES Consultants Limited	ANY SENES	onsultants Lin	nited							
SEND REPORT TO	Darrell Liles	INVOICE ATTN TO Andrea Pegg	TO Andrea	pegg.								
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDRI	ESS 121 Graf	ADDRESS 121 Granton Dr., Unit #12	2							
CITY/STATE/ZIP	Englewood, CO 80112	CITY / STATE /	ZIP Richmo	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	3N4		-	-				_
PHONE	PHONE (303) 521-1406	Æ	PHONE (905) 764-9380	F-9380								
FAX			FAX (905) 764-9386	-9386								
E-MAIL	dliles@senesusa.com	E-M	E-MAIL apegg@	apegg@senes.ca								T
			Sample	Sample	# Some							
Lab ID		Wall X	Date	Time	S S		822-258					
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(2)	RWU2-002	Soil	01/11/2012	1738	-	=	×					T
(3)	RWU2-001	Soil	01/11/2012	1755	-	=	×					
(5	RWU3-015	Soil	01/11/2012	1805	-	=	×					T
(S)	RWU3-014	Soil	01/11/2012	1815	-	=	×					1
(9)	RWU3-003	Soil	02/11/2012	750	-	=	×					
(A)	RWU2-014	Soil	02/11/2012	820	-	=	×					T
(3)	RWU3-013	Soil	02/11/2012	931	-	=	×			1		I
6	RWU3-002	Soil	02/11/2012	1255	-	=	×					
(e)	RWU3-004	Soll	02/11/2012	1310	-	=	×					
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•							SIGNATURE		PRINTED NAME	5	DATE	

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LEVEL III (Standard QC)
LEVEL IV (Std QC + forms)
+ Taw defa) QC PACKAGE (check below) For metals or anions, please detail analytes below. Preservative Key: 1-HCI 2-HNO3 3-H2SO4

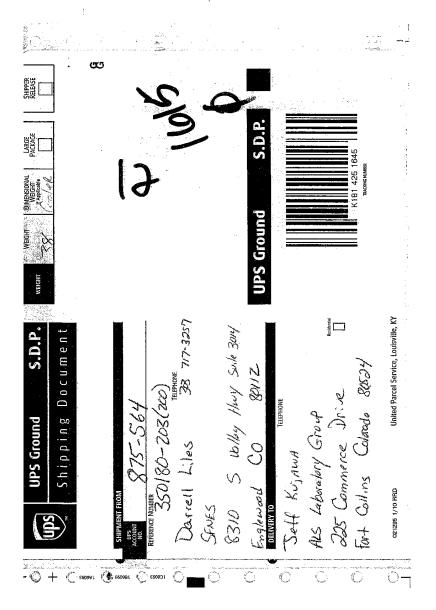
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	ALS Laboratory Group 225 Commerce Drive, Fort Collins, Colorado 80524 TE: (800) 426-1517 PX: (870) 480-1521	74 -1522			Chain-of-Custody	ပုံ ဝု	ıstoc				Ē	Form 202r8	WORKORDER #	1211078	1	40	\bigotimes
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COMPANY NAME	SENES	BILL TO COMP!	ANY SENE	BILL TO COMPANY SENES Consultants Limited	imited												
SEND REPORT TO	Darrell Liles	INVOICE ATTN TO Andrea Pegg	TO Andre	a Pegg			Γ.										
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDR	ESS 121 G	ADDRESS 121 Granton Dr., Unit #12	412		<u> </u>										
CITY / STATE / ZIP	Englewood, CO 80112	CITY/STATE/	ZIP Richm	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	3 3N4												
PHONE	(303) 521-1408	¥	PHONE (905) 764-9380	64-9380			<u> </u>								Ţ		
FAX			FAX (905) 764-9386	164-9386													
E-MAIL	dilles@senesusa.com	8-9	MAIL apeq	E-MAIL apegg@senes.ca		•											
Lab ID	Qi piei.	Matrix	Sample Date	Sample Time	# Sample Pres.		97 2										
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ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Senes Workorder No: 121107K Project Manager: 1PK Initials: 1AS Date: 11612 1. Does this project require any special handling in addition to standard ALS procedures? Are custody seals on shipping containers intact? Are Custody seals on shipping containers intact? None YES NO 1. Is there a COC (Chain-of-Custody) present or other representative documents? 5. Are the COC and bottle labels complete and legible? 1. Is there a COC (Chain-of-Custody) present or other representative documents? 5. Are the COC and bottle labels complete and legible? 1. Is there a COC (Chain-of-Custody) present or other representative documents? 5. Are the COC and bottle labels complete and legible? 1. Is there a COC (Chain-of-Custody) present or other representative documents? 5. Are the COC and bottle labels complete and legible? 1. Is there a COC (Chain-of-Custody) present and/or removable? 1. Were air layers are an advantaged correctly? (excluding volatiles) 1. Were all samples requiring preservation preserved correctly? (excluding volatiles) 1. Were all samples requiring preservation preserved correctly? (excluding volatiles) 1. Were all samples requiring preserved annalyses? 1. Were all samples within holding times for the requested analyses? 1. Were all samples within holding times for the requested analyses? 1. Were all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) 1. Headspace free? Size of bubble: _ < green pea _ > green pea 1. Size of bubble: _ < green pea _ > green pea 1. Size of bubble: _ < green pea _ > green pea 1. No. of custody seals on cooler:	(ALS)	010		
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4. Is there a COC (Chain-of-Custody) present or other representative documents? 5. Are the COC and bottle labels complete and legible? 6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.) 7. Were airbills / shipping documents present and/or removable? 8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles) 9. Are all aqueous on-preserved samples pH 4-9? 10. Were all samples placed in the proper containers for the requested analyses? 11. Were all samples placed in the proper containers for the requested analyses? 12. Are all samples within holding times for the requested analyses? 13. Were all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) 14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) 15. Do any water samples contains sediment? 16. Amount of sediment: dusting moderate heavy 17. Were cooler temperatures measured at 0.1-6.0°C? 18. Were the samples shipped on ice? 19. Were cooler temperatures measured at 0.1-6.0°C? 19. Were cooler temperatures measured at 0.1-6.0°C? 10. Regun used*: #2 #4 (ONL) 10. YES (NO) 10. Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSET TO New Clustron ABOVE, EXCEPT #1 AND #16. 10. Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSET TO New Clustron ABOVE, EXCEPT #1 AND #16. 11. Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSET TO New Clustron ABOVE, EXCEPT #1 AND #16. 12. ID THE Color of the Clustron ABOVE, EXCEPT #1 AND #16. 13. Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSET TO New Clustron ABOVE, EXCEPT #1 AND #16. 14. In Gun #2-Oaldon, SN 29922500201-0066 15. In Gun #2-Oaldon, SN 29922500201-0066 16. Gun #4-Oaldon, SN 29922500201-0066 17. Gun #2-Oaldon, SN 29922500201-0066 17. Gun #4-Oaldon, SN 29922500201-0066	2. Are custody seals on shipping containers intact?	NONE) YES	NO
S. Are the COC and bottle labels complete and legible? (PES) NO	3. Are Custody seals on sample containers intact?	NONE	YES	NO
6) Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.) 7. Were airbills / shipping documents present and/or removable? 8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles) 8. Are all aqueous non-preserved samples pH 4-9? 8. Are all asamples placed in the proper containers for the requested analyses? 8. NO 8. Is there sufficient sample for the requested analyses? 9. The NO 9. Is It apples and the proper containers for the requested analyses? 9. The NO 10. Is amples placed in the proper containers for the requested analyses? 11. Were all samples placed in the proper containers for the requested analyses? 12. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) 13. Were all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) 14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) 15. Do any water samples contain sediment? 16. Were the samples shipped on ice? 17. Were cooler temperatures measured at 0.1-6.0°C? 18. It apples to the samples shipped on ice? 19. Were external µR/hr reading: 10. The No. of custody seals on cooler: 10. The No. of custody seals on cooler: 10. The No. of custody seals on cooler: 11. The No. of custody seals on cooler: 12. The No. of custody seals on cooler: 13. No. of custody seals on cooler: 14. The No. of custody seals on cooler: 15. No. of custody seals on cooler: 16. Were external µR/hr reading: 17. The No. of custody seals on cooler: 18. No. of custody seals on cooler: 19. No. of custody seals on cooler: 10. No. of custody seals on	Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
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9. Are all aqueous non-preserved samples pH 4-9? 10. Is there sufficient sample for the requested analyses? 11. Were all samples placed in the proper containers for the requested analyses? 12. Are all samples within holding times for the requested analyses? 13. Were all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) 14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) 15. Do any water samples contain sediment? 16. Were the samples shipped on ice? 17. Were cooler temperatures measured at 0.1-6.0°C? 18. R gun used*: #2 #4 (RAD) 19. VES NO Cooler #: Temperature (*C): ATUB No. of custody seals on cooler: DOT Servey Recternal µR/hr reading: Background µR/hr reading: Were external µR/hr reading: Background µR/hr reading: Background µR/hr reading: Work external µR/hr reading: Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY-QUESTION ABOVE, EXCEPT #1 AND #16. **W 12110 TR - L has COC ID = RWU3 - OO3, date = 11 2 12 but bag [Abel has ID = RWU3 - 101, date = 11 2 12 but bag [Abel has ID = R	7. Were airbills / shipping documents present and/or removable?	DROP OFF	YES) NO
10. Is there sufficient sample for the requested analyses? TES NO 11. Were all samples placed in the proper containers for the requested analyses? TES NO 12. Are all samples within holding times for the requested analyses? TES NO 13. Were all samples containers received intact? (not broken or leaking, etc.) TES NO 14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) N/A YES NO 15. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) N/A YES NO 16. Are all samples contain sediment? Amount of sediment: dusting moderate heavy Amount of sediment: dusting moderate heavy YES NO 16. Were the samples shipped on ice? YES NO 17. Were cooler temperatures measured at 0.1-6.0°C? R gun used*: #2 #4 (NNX) YES NO 18. Were cooler temperatures measured at 0.1-6.0°C? R gun used*: #2 #4 (NNX) YES NO 19. DOT Survey Acceptance External µR/hr reading: L L L L L L L L L	8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	YES	NO
11. Were all samples placed in the proper containers for the requested analyses? 12. Are all samples within holding times for the requested analyses? 13. Were all samples containers received intact? (not broken or leaking, etc.) 14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble:	9. Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
2 Are all samples within holding times for the requested analyses? (FES) NO 3 Were all sample containers received intact? (not broken or leaking, etc.) (FES) NO 4 Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: size of pubble: size of pubb	10. Is there sufficient sample for the requested analyses?		(YES)	NO
13. Were all sample containers received intact? (not broken or leaking, etc.) 14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea > green pea NA	11. Were all samples placed in the proper containers for the requested analyses?		YES	NO
Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea > green pea \$ green	12. Are all samples within holding times for the requested analyses?		YES	NO
headspace free? Size of bubble: _ < green pea _ > green pea _ Step _ green pea _ Step _ green pea _ Step _	13. Were all sample containers received intact? (not broken or leaking, etc.)		YES	NO
Amount of sediment:dustingmoderateheavy		N/A	YES	NO
16. Were the samples shipped on ice? 17. Were cooler temperatures measured at 0.1-6.0°C? 18. Regun used*: #2 #4 RAD YES NO Cooler #: Temperature (°C): ATUB No. of custody seals on cooler: Background µR/hr reading: Were external µR/hr readings < two times background and within DOT acceptance criteria YES (NO/NA (If no, see Form 008.)) Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, SECEPT #1 AND #16. **Wo 2 10 78 - 6 has COC D = RWU3 - 003, dafe = 1 2 12 hut bag 2 12 hut bag 2 12 12 hut bag 2 2 2 2 2 2 2 2 2	• •	N/A)	YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4 (ND) YES NO	16. Were the samples shipped on ice?		YES	(NO)
Cooler #: Temperature (°C): No. of custody seals on cooler: No. of custody seals on cooler: External µR/hr reading: Were external µR/hr readings ≤ two times background and within DOT acceptance criteria Were external µR/hr readings ≤ two times background and within DOT acceptance criteria YES / NO / NA (If no, see Form 008.) Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16. **D 12 110 78 - 6 has COC 1D = RWU3 - 003, dafe = 11/2/12 but bag [Abel has 1D = RWU2 - 003, dafe = 11/2/12 but bag [Abel has 1D = RWU3 - 101, dafe = 11/2/12 but bag [Abel h	12 TV 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		YES	->-
Temperature (°C): ATUB No. of custody seals on cooler: DOT survey Acceptance Background μ R/hr reading: 2 Were external μ R/hr readings \leq two times background and within DOT acceptance criteria YES/NO/NA (If no, see Form 008.) Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO NOTOLESTION ABOVE, EXCEPT #1 AND #16. **(b) 12 110 78 - 6 has COC 1D = RWW3-003, dafe = 11/2/12 but bag [abel has 1D = RWW2-003, dafe = 11/2/12 but bag [abel has 1D = RWW3-01], dafe = 11/2/12 but bag [abel has 1D = RWW3-10], dafe = 11/2/12 but bag [abel has 1D = RW3-10], dafe = 11/2/12 but bag [abel has 1D = RW3-10], dafe = 11/2/12 but bag [abel ha		TONLY		
No. of custody seals on cooler: DOT Survey Acceptance Program of External μ R/hr reading: Background μ R/hr reading: Were external μ R/hr readings \leq two times background and within DOT acceptance criteria (YES) NO/NA (If no, see Form 008.) Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16. **W 12-110-78-6 has COC 1D=RWU3-003, date= $\frac{11}{2}$ but bag [abel has 1D=RWU2-003, date= $\frac{11}{2}$] but bag [abel has 1D=RWU3-10], date= $\frac{11}{2}$] but				
External μ R/hr reading: Background μ R/hr reading: Were external μ R/hr readings Were external μ R/hr readings Were external μ R/hr readings YES / NO / NA (If no, see Form 008.) AddItional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY OUTSITO ABOVE, EXCEPT #1 AND #16. # 10 10 10 10 10 10 10 10				
Background μ R/hr reading: Were external μ R/hr readings \leq two times background and within DOT acceptance criterial YES/NO/NA (If no, see Form 608.) Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16. **L) 2 078 - 6 has COC D = RWU3-003, date = 1 /2 2 but bag label has D = RWU2-003, date = 1 /2 2 but bag label has D = RWU3-011, date = 1 /2 2 but bag label has D = RWU3-101 , date = 1 /2 2 but bag label has D = RWU3-1	DOT Survey	· ·		. ——
Were external μ R/hr readings \leq two times background and within DOT acceptance criteria YES/NO/NA (If no, see Form 008.) Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16. #U 211078-6 has COC D=RWU3-003, dafe= 1 2 2 but bag Label has D=RWU2-003, dafe= 1 2 2 but bag Label has D=RWU3-011, dafe= 1 2 2 but bag Label has D=RWU3-101 , dafe= 1 2 2 but bag Label has Label has D=RWU3-101 , dafe= 1 2 2 but bag Label has D=RWU3-101 , dafe= 1 2 but bag Label has L	Information			
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16. **LO 1211078-6 has COC ID = RWU3-003, date = 11/2/12 but bag Label Nas ID = RWU2-003, date = 11/2/12 but bag Label Nas ID = RWU3-011, date = 11/2/12 but bag Label Nas ID = RWU3-101, date = 11/2/12 but bag Label Nas ID = RWU3-101, date = 11/2/12 but bag Label Nas ID = RWU3-101, date = 11/2/12 but bag Label Nas ID = RWU3-101, date = 11/2/12 but bag Label Nas ID = RWU3-101, date = 11/2/12 but bag Label Nas ID = RWU3-101, date = 11/2/12 but bag Label Nas ID = RWU3-101, date = 11/2/12 but bag Label Nas ID = RWU3-101, date = 11/2/12 but bag Label Nas ID = RWU3-101, date = 11/2/12 but bag Label Nas ID = RWU3-011, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-001, date = 11/2/12 but bag Label Nas ID = RWU3-003, date = 11/2/12 but bag Label Nas ID = RWU3-003, date = 11/2/12 but bag Label Nas ID = RWU3-003, date = 11/2/12 but bag Label Nas ID = RWU3-003, date = 11/2/12 but bag Label Nas ID = RWU3-003, date = 11/2/12 but bag Label Nas ID = RWU3-003, date = 11/2/12 but bag Label Nas ID = RWU3-003, date = 11/2/12 but bag Page I of Date/ID = RWU3-003, date = 11/2/12 but bag Label Nas ID = RWU3-003, date = 11/2/12 but bag Page I of Date/ID = RWU3-003, date = 11/2/12 but bag Label Nas ID = RWU3-003, date = 11/2/12 but bag Page I of Date/ID = RWU3-003, date = 11/2/12 but bag		T 000.		
*10 12 110 78 - 6 has COC ID = RWU3-003, date = 11/2/12 but bag label has ID = RWU2-003, date = 11/2/12 but bag *10 110 78 - 13 has COC ID = RWU3-011, date = 11/2/12 but bag label has ID = RWU3-101, date = 11/2/12 but bag label has ID = RWU3-101, date = 11/2/12 but bag If applicable, was the client contacted? (ES) NO/NA Contact: Liles Date/Time: 11-6. U Project Manager Signature / Date:				
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If applicable, was the client contacted? (ES) NO / NA Contact: Lies Date/Time: 11-6-12 Project Manager Signature / Date: 11-6-12 *IR Gun #2: Oakton, SN 29922500201-0006 Form 201r24.xls (06/04/2012) *IR Gun #4: Oakton, SN 2372220101-0002 Page 1 of	(M) (M) 10 - RWUZ-005, aut = 11/4/12			
If applicable, was the client contacted? (ES) NO / NA Contact: Discontact: Discontacted Project Manager Signature / Date: U - 6 · (L) Project Manager Signature / Date: *IR Gun #2: Oakton, SN 29922500201-00066 *IR Gun #4: Oakton, SN 2372220101-0002 Page 1 of	* 10/1078 12 has non 10= PH/12-011 date - 11/21	12 /04	f-lag.	
If applicable, was the client contacted? (ES) NO / NA Contact: Lies Date/Time: 11-6-12 Project Manager Signature / Date: 11-6-12 *IR Gun #2: Oakton, SN 29922500201-0006 *IR Gun #4: Oakton, SN 2372220101-0002 Page 1 of	101010-15 1005 COC 10 FOR 5011, date = 1/2/15	J VV	NOC)
Project Manager Signature / Date:	Capel Mas 110- Rough 101, date "(a)la			
Project Manager Signature / Date:				
Project Manager Signature / Date: *IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002 *Page 1 of	11/		177	
*IR Gun #2: Oakton, SN 29922500201-0066 Form 201r24.xls (06/04/2012) *IR Gun #4: Oakton, SN 2372220101-0002 Page 1 of	ri applicable, was the chent contacted? WES/ NO / NA Contact: N V. [85]	Date/Ti	me: /(~6	- 6-
Form 201r24.xls (06/04/2012) *IR Gun #4: Oakton, SN 2372220101-0002 Page 1 of	Project Manager Signature / Date: \\\ \/ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	_		
Form 201r24.xls (06/04/2012) *IR Gun #4: Oakton, SN 2372220101-0002 Page 1 of	// *IP Cup #9: Onlyon ON 20022500204 2002			
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				6



PAI 713 Rev 12 **Method Blank Results**

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: GS121107-4MB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Final Aliquot: 215 g Result Units: pCi/g File Name: 121456d10

Library: RA226.LIB

Date Collected: 09-Nov-12 Date Prepared: 09-Nov-12

Run ID: GS121107-4A Count Time: 30 minutes

Date Analyzed: 30-Nov-12

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	-0.04 +/- 0.15	0.29	1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Date Printed: Wednesday, December 05, 2012

Data Package ID: GSS1211078-1

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

8 of 26

PAI 713 Rev 12

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: GS121107-4LCS

CASNO

13982-63-3

Sample Matrix: SOIL

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1

3

Final Aliquot: 215 g Result Units: pCi/g File Name: 121452d06

Library: RA226.LIB

Target

Nuclide

Ra-226

Prep SOP: PAI 739 Rev 10 Date Collected: 09-Nov-12 Date Prepared: 09-Nov-12

Run ID: GS121107-4A Count Time: 30 minutes

Date Analyzed: 30-Nov-12

Results +/- 2s TPU

457 +/- 54

MDC	

Spike Added	% Rec	Control Limits	Lab Qualifier
469.4	97.2	85 - 115	P,M3

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

LT - Result is less than Requested MDC, greater than sample specific MDC. Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit. H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits. M - The requested MDC was not met.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative. TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC. Data Package ID: GSS1211078-1

Date Printed: Wednesday, December 05, 2012

ALS Environmental -- FC

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

Page 1 of 1

PAI 713 Rev 12

Duplicate Sample Results (DER)

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-001 Lab ID: 1211078-3DUP Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 01-Nov-12 Date Prepared: 09-Nov-12

Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Run ID: GS121107-4A Count Time: 30 minutes

Report Basis: Dry Weight

Final Aliquot: 182 q Prep Basis: Dry Weight Moisture(%): NA Result Units: pCi/g

File Name: 121721d01

CASNO Sample DER DER **Duplicate** Analyte Flags Result +/- 2 s TPU MDC Result +/- 2 s TPU MDC Flags Lim 13982-63-3 0.54 Ra-226 1.28 +/- 0.29 0.41 G 1.13 +/- 0.31 0.355 2.13

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits. N - Matrix Spike Recovery outside control limits

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative. R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1211078-1

Abbreviations:

TPU - Total Propagated Uncertainty

DER - Duplicate Error Ratio BDL - Below Detection Limit

NR - Not Reported

Date Printed: Wednesday, December 05, 2012

ALS Environmental -- FC

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PAI 713 Rev 12

Duplicate Sample Results (DER)

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-014 Lab ID: 1211078-5DUP Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 01-Nov-12 Date Prepared: 09-Nov-12

Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Run ID: GS121107-4A Count Time: 30 minutes

Final Aliquot: 196 q Prep Basis: Dry Weight Moisture(%): NA

Result Units: pCi/g Report Basis: Dry Weight File Name: 121708d02

CASNO	Analyte	Sample	•		Duplica	ate		DER	DER
	Allalyte	Result +/- 2 s TPU	MDC	Flags	Result +/- 2 s TPU	MDC	Flags		Lim
13982-63-3	Ra-226	1.11 +/- 0.30	0.51		0.88 +/- 0.24	0.40	LT	0.595	2.13

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit. P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

TPU - Total Propagated Uncertainty

DER - Duplicate Error Ratio BDL - Below Detection Limit NR - Not Reported

Abbreviations:

SQ - Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1211078-1

Date Printed: Wednesday, December 05, 2012

ALS Environmental -- FC

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LIMS Version: 6.625

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-004

Lab ID: 1211078-1

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 01-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Run ID: GS121107-4A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 195 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121333d05

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.99 +/- 0.35	0.42	1	

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty

 MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211078-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

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Date Printed: Wednesday, December 05, 2012

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-002 Lab ID: 1211078-2

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 01-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4

QCBatchID: GS121107-4-1

Run ID: GS121107-4A

Run ID: GS121107-4A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 209 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121450d06

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.73 +/- 0.36	0.49	1	

Comments:

Qualifiers/Flags:

- $\ensuremath{\mathsf{U}}\xspace$ Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- $\ensuremath{\mathsf{LT}}$ Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty
- MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211078-1

Date Printed: Wednesday, December 05, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

LIMS Version: 6.625

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-001 Lab ID: 1211078-3

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 01-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Run ID: GS121107-4A

Run ID: GS121107-4A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 182 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121468d07

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.28 +/- 0.29	0.41	1	G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211078-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.

LIMS Version: 6.625

G - Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

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PAI 713 Rev 12 Sample Duplicate Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-001 Lab ID: 1211078-3DUP Library: RA226.LIB Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 01-Nov-12

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Run ID: GS121107-4A Final Aliquot: 182 g Prep Basis: Dry Weight Moisture(%): NA

Date Prepared: 09-Nov-12 Date Analyzed: 30-Nov-12

Count Time: 30 minutes Report Basis: Dry Weight

Result Units: pCi/g File Name: 121721d01

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.13 +/- 0.31	0.54	1	G

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M The requested MDC was not met.
- M3 The requested MDC was not met, but thereported activity is greater than the reported MDC.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211078-1

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Date Printed: Wednesday, December 05, 2012

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-015

Lab ID: 1211078-4

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 01-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Run ID: GS121107-4A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 178 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121631d08

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.19 +/- 0.30	0.51	1	G

Comments:

Qualifiers/Flags:

- $\ensuremath{\mathsf{U}}\xspace$ Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty
- MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211078-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.

LIMS Version: 6.625

G - Sample density differs by more than 15% of LCS density.

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Date Printed: Wednesday, December 05, 2012

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-014 Lab ID: 1211078-5

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 01-Nov-12

Date Prepared: 09-Nov-12 Date Analyzed: 30-Nov-12 Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Run ID: GS121107-4A

Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 196 g Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121478d09

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.11 +/- 0.30	0.51	1	

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

- TPU Total Propagated Uncertainty
- MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211078-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Duplicate Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-014

Lab ID: 1211078-5DUP

Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 01-Nov-12 Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Run ID: GS121107-4A

Final Aliquot: 196 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g

File Name: 121708d02

Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Count Time: 30 minutes
Report Basis: Dry Weight

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.88 +/- 0.24	0.40	1	LT

Comments:

Qualifiers/Flags:

- $\,$ U $\,$ Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits. LT - Result is less than Requested MDC,
- $\ensuremath{\mathsf{LT}}$ Result is less than Requested MDC, greater than sample specific MDC.
- M The requested MDC was not met.
- M3 The requested MDC was not met, but thereported activity is greater than the reported MDC.
- $\ensuremath{\text{W}}$ DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211078-1

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Date Printed: Wednesday, December 05, 2012

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-003
Lab ID: 1211078-6

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 02-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Run ID: GS121107-4A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 214 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121455d10

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	2.35 +/- 0.39	0.41	1	

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty

 MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211078-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU2-014

Lab ID: 1211078-7

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 02-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Run ID: GS121107-4A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 197 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 120148d03

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.90 +/- 0.25	0.45	1	LT

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211078-1

Date Printed: Wednesday, December 05, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-013 Lab ID: 1211078-8

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 02-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Run ID: GS121107-4A

Run ID: GS121107-4A

Count Time: 30 minutes

Report Basis: Dry Weight

Final Aliquot: 186 g
Prep Basis: Dry Weight
Moisture(%): NA

Result Units: pCi/g File Name: 121986d04

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	2.00 +/- 0.39	0.45	1	

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty

 MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211078-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.

LIMS Version: 6.625

G - Sample density differs by more than 15% of LCS density.

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Date Printed: Wednesday, December 05, 2012

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-002 Lab ID: 1211078-9

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 02-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Run ID: GS121107-4A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 184 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121334d05

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.17 +/- 0.27	0.43	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211078-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-004

Lab ID: 1211078-10

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 02-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1 Run ID: GS121107-4A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 197 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121451d06

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.38 +/- 0.34	0.59	1	

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty

 MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211078-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-005

Lab ID: 1211078-11

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 02-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4

QCBatchID: GS121107-4-1

Run ID: GS121107-4A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 201 g
Prep Basis: Dry Weight
Moisture(%): NA

Moisture(%): NA Result Units: pCi/g File Name: 121469d07

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.45 +/- 0.30	0.41	1	

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviations:

- TPU Total Propagated Uncertainty

 MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211078-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-007 Lab ID: 1211078-12

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 02-Nov-12 Date Prepared: 09-Nov-12 Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4 QCBatchID: GS121107-4-1

Run ID: GS121107-4A Count Time: 30 minutes Report Basis: Dry Weight

Final Aliquot: 182 g Prep Basis: Dry Weight Moisture(%): NA

Result Units: pCi/g File Name: 121632d08

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.73 +/- 0.34	0.48	1	G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1211078-1

Date Printed: Wednesday, December 05, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

Page 12 of 13 ALS Environmental -- FC

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1211078

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: RWU3-101 Lab ID: 1211078-13

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 02-Nov-12
Date Prepared: 09-Nov-12
Date Analyzed: 30-Nov-12

Prep Batch: GS121107-4 **QCBatchID:** GS121107-4-1

Run ID: GS121107-4A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 198 g Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121479d09

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.60 +/- 0.34	0.48	1	

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty

 MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1211078-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

LIMS Version: 6.625

Page 13 of 13



ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1209098

Client Name: SENES Consultants Limited Client Project Name: Church Rock Phase II Client Project Number: SENES 350180-203

Client PO Number: Account Number 816126858

Report Due Date: 10/10/2012

Client Sample Number	Lab Sample Number	Test Group	COC Number	Matrix	Date Collected	Time Collected
SO-350180-203-090612-SC-VH	1209098-1	1		SOIL	06-Sep-12	13:25
SO-350180-203-090612-SC-VH	1209098-2	1		SOIL	06-Sep-12	13:28
SO-350180-203-090612-SC-VH	1209098-3	1		SOIL	06-Sep-12	13:33
SO-350180-203-090612-SC-VH	1209098-4	1		SOIL	06-Sep-12	13:39
SO-350180-203-090612-SC-VH	1209098-5	1		SOIL	06-Sep-12	13:45

^{**}Designated QC

Analytical Methods by Test Group

Test Group: 1

Ra_226/228 SOP642 SW6020

ALS Laboratory Group

225 Commerce Drive, Fort Collins, Colorado 80624 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

Chain-of-Custody

WORKORDER (209098

	1F: (800) 445-1511 FH: (970) 480-1511 FX: (970) 480-1522	7725								Form 202r8			<u>,</u>	- 4004	0
(ALS)		SAMPLE	SAMPLER Stephen Corning	Corning					DATE	September 6 2012	2	PAGE	-(of	1
PROJECT NAME	PROJECT NAME Church Rock Phase	SUE	SITE ID VHCC-1" gravel	" graveľ			F	TURNAROUND	GNDC	15days	3	DISPOSAL	(By Lab	or Retur	Return to Client
PROJECT No.	PROJECT No. SENES 350180-203	EDD FORWAT	ΑT			ı)		
	The state of the s	FURCHASE ORDER Account Number 816126858	R Account	Number 816126	858										
COMPANY NAME	SENES	BILL TO COMPANY SENES Consultants Limited	W SENES	Consultants Limi	ted										
SEND REPORT TO	Darrell Lites	INVOICE ATTIN TO Andrea Pegg	FO Andrea	Pegg										·-	
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDRE	SS 121 Gran	ADDRESS 121 Granton Dr., Unit #12	 										
CITY / STATE / ZIP	Englewood, CO 80112	CHY (STATE / ZIP Richmond Hill, ON L4B 3N4	IP Richmor	nd Hill, ON L4B 3	₹										
PHONE	PHONE (303) 521-1406	PHO!	PHONE (905) 764-9380	1-9380											
FAX		2	FAX (905) 764-9386	+9386											
E-MAIL.	dilles@senesusa.com	E-MA	E-MAIL apegg@senes.ca	Øsenes.ca											
9	Leid ID	Matrix	Sample Date	Sample Time	# Sample Pres.	See	PA-226	Uranium Total 17							
<u>(</u>	SO-350180-203-090612-SC-VHCC-001	soil 9	9/6/2012	9-6-12 1325 1-bag		2	×	×							
(2)	SO-350180-203-090612-SC-VHCC-002	8 lios	9/6/2012	9-6-12 1328 1-bag		2	×	×							
(6)	SO-350180-203-090612-SC-VHCC-003	6 lios	9/6/2012	9-6-12 1333 1-bag		DU	×	×							
(4)	SO-350180-203-090612-SC-VHCC-004	6 lios	9/6/2012	9-6-12 1339 1-bag		υO	×	×							
(<u>s</u>)	SO-350180-203-090612-SC-VHCC-005	6 lios	9/6/2012	9-6-12 1345 1-bag		ou	×	×							
					:										

Time Zone (Circle): EST CST VISTOPST Matrix: O = oil S = soil NS = non-soil soild W = water L = liquid E = extract F = filter
For metals or antions, please detail analytes below.

LEVEL III (Std QC + forms)
LEVEL IV (Std QC + forms + raw data) QC PACKAGE (check below)
X LEVEL II (Standard QC) "Hold excess sample materials"

Preservative Key: 1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035 Comments: Copies to: rstager@senesusa.ca dliles@senesusa.com

		Clearly Colle		{		-
	RELINQUISHED BY	RELINQUISHED BY Stoppen Maring Stopen in Cornery 9/11/12 0900	Spelan m Colos	8/0/13	0060	-
	RECEIVED BY	Your Vilia	Lawen Schmitt	0860 4/101/6	09.30	-
, margin	RELINQUISHED BY					
بالتناس	RECEIVED BY					
	RELINQUISHED BY					
سخسا	RECEIVED BY					

A

ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

(pri 60 ma)	Client:	SENE	S	Workor	der No:	120	909	8	
Project N	 Manager:	JRK			Initials:	LAS		9/10/	12
1. Does this pro	oject requir	e any special handling	in addition to star	dard ALS proce	edures?			YES	(NO)
2. Are custody	y seals on	shipping containers	intact?			******	NONE	YES	NO
3. Are Custod	y seals on	sample containers in	ntact?				NONE	YES	NO
4 Is there a C	OC (Chai	n-of-Custody) presei	nt or other repres	sentative docur	ments?			YES	NO
5. Are the CO	C and bot	tle labels complete a	nd legible?					YES	NO
		ent with samples requested analyses, etc		es, times, no. of	f samples	, no. of		(FES)	NO
 Were airbil 	ls / shippi	ng documents preser	nt and/or remova	ble?			DROP OFF	YES	NO
8. Are all aqueo	ous sample	requiring preservation	n preserved correc	thy? (excluding	volatiles)		(N/A)	YES	NO
9. Are all aque	eous non-j	preserved samples pl	H 4-9?				(N/A)	YES	NO
10. Is there suf	ficient san	aple for the requeste	d analyses?					YES	NO
11. Were all sa	mples plac	ed in the proper cor	ntainers for the re	equested analy	ses?			(YES)	NO
12. Are all sam	ples withi	n holding times for t	he requested ana	alyses?				YES	NO
		ainers received intac						YES	NO
14. Are all sam headspace t		ring no headspace (V Size of bubble:	VOC, GRO, RSI _< green pea	K/MEE, Rx CN > green		1)	N/A)	YES	NO
15. Do any wat	ter sample	s contain sediment?			An	nount	(N/A)	YES	NO
Amount of	sediment:	dusting	moderate	heavy				123	110
16. Were the sa	imples shi	pped on ice?						YES	(NO)
17. Were coole	r tempera	tures measured at 0.1	1-6.0°C?	IR gun used*:	#2	#4	RAD ONLY	YES	(NO)
		Cooler #:							
		Temperature (°C):	AMB						
	No. of cus	tody seals on cooler:	<u> </u>						
DOT Survey/ Acceptance Information	Ex	ternal μR/hr reading:	12						
# HOTSIBILION	Backg	round µR/hr reading:	11						
Were external µ	R/hr readings	≤ two times background an	d within DOT accepta	nce criteria YES)NO/NA	(If no, see	Form 008.)		
Additional Info	ormation:	PROVIDE DETAILS BE	LOW FOR A NO RES	PONSE TO ANY	UESTION A	ABOVE, EX	CEPT #1 A	ND #16.	
					***************************************	1-1			
			1	•					
If applicable, was	s the client c	ontacted? YES / NO/N	Contact:				Date/Tis	me:	
Project Manag	er Sionati	re/Date:	115	7/10/17					
	J-2 ~-811111			7 7 7 6		············	-		
		*IF	R Gun #2: Oakton, S	N 29922500201-0	066)

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002



Metals Case Narrative

SENES Consultants Limited

Church Rock Phase II – SENES 350180-203

Work Order Number: 1209098

- 1. This report consists of 5 soil samples.
- 2. The samples were received intact at ambient temperature by ALS on 9/10/12.
- 3. The samples were prepared and analyzed based on SW-846, 3rd Edition procedures.

For analysis by ICP-MS, the samples were digested following method 3050B and the current revision of SOP 806.

- 4. Analysis by ICP-MS followed method 6020A and the current revision of SOP 827.
- All standards and solutions are NIST traceable and were used within their recommended shelf life.
- 6. The samples were prepared and analyzed within the established hold times.

All in house quality control procedures were followed, as described below.

- 7. General quality control procedures.
 - A preparation (method) blank and laboratory control sample were digested and analyzed with the samples in this digestion batch.
 - The preparation (method) blank associated with this digestion batch was below the reporting limit for the requested analytes.
 - All laboratory control sample criteria were met.
 - All initial and continuing calibration blanks were below the reporting limit for the requested analytes.
 - All initial and continuing calibration verifications were within the acceptance criteria for the requested analytes.



- The interference check samples associated with Method 6020A were analyzed.
- 8. Matrix specific quality control procedures.

Per method requirements, matrix QC was performed for this analysis. Since a sample from this order number was not the selected quality control (QC) sample, matrix specific QC results are not included in this report.

9. It is a standard practice that samples for ICP-MS are analyzed at a dilution.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Jill Latelle

Inorganics Primary Data Reviewer

Inorganids Final Data Reviewer

9/24/12



Inorganic Data Reporting Qualifiers

The following qualifiers are used by the laboratory when reporting results of inorganic analyses.

- Result qualifier -- If the analyte was analyzed for but not detected a "U" is entered.
- QC qualifier -- Specified entries and their meanings are as follows:
 - E The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
 - M Duplicate injection precision was not met.
 - N Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
 - Z Spiked recovery not within control limits. An explanatory note may be included in the narrative.
 - * Duplicate analysis (relative percent difference) not within control limits.
 - S SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1209098

Client Name: SENES Consultants Limited

Client Project Name: Church Rock Phase II Client Project Number: SENES 350180-203

Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
SO-350180-203-090612-SC-VHC	1209098-1		SOIL	06-Sep-12	13:25
SO-350180-203-090612-SC-VHC	1209098-2		SOIL	06-Sep-12	13:28
SO-350180-203-090612-SC-VHC	1209098-3		SOIL	06-Sep-12	13:33
SO-350180-203-090612-SC-VHC	1209098-4		SOIL	06-Sep-12	13:39
SO-350180-203-090612-SC-VHC	1209098-5		SOIL	06-Sep-12	13:45



ALS Laboratory Group 225 Commerce Drive, Fort Collins, Colorado 80524 IF: (800) 443-1511 PH (870) 490-1511 PX (970) 480-1522

Chain-of-Custody

wоякорбе (209098

								İ					Form Zuzra	217				2	,		-
(<)		SAMPLE	SAMPLER Stephen Corning	Corning						DATE		eptem	September 6 2012	12	à	PAGE	- (₫	-	
PROJECT NAME	PROJECT NAME Church Rock Phase II	SITE ID	D VHCC-1" gravel	gravel				4	TURNAROUND	ONN		5	15days		DISPOSAL		By Lab	o	Retur	Return to Client	ent
PROJECT No.	SENES 350180-203	EDD FORMAT	5					-	_								-		-		
		PURCHASE ORDER Account Number 816126858	R Account	Number 816126	858													_			
COMPANY NAME	SENES	BILL TO COMPANY SENES Consultants Limited	Y SENES C	onsultants Lim	ited																
SEND REPORT TO	Darrell Liles	INVOICE ATTN TO Andrea Pegg	O Andrea Pe	556																	
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDRES	S 121 Grant	ADDRESS 121 Granton Dr., Unit #12	2	3															
CITY / STATE / ZIP	Englewood, CO 80112	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	P Richmond	HIII, ON L4B	NA NA																
PHONE	(303) 521-1406	PHONE	E (905) 764-9380	9380																	
FAX		FA	FAX (905) 764-9386	9386																	
E-MAIL	diiles@senesusa.com	E-MAI	E-MAIL apegg@senes.ca	seues ca									_								
Lab ID	Field ID	Matrix	Sample Date	Sample Time	Sample Pres.	P. s.	8	8A-226	Uranium Total												
9	SO-350180-203-090612-SC-VHCC-001	lios	9/6/2012 9	9-6-12 1325	1-bag	2		×	× ×												
(2)	SO-350180-203-090612-SC-VHCC-002	lios	9/6/2012 9	9-6-12 1328	1-bag	92		×	×										-		
(3)	SO-350180-203-090612-SC-VHCC-003	lios	9/6/2012 9-	9-6-12 1333 1-bag	1-bag	2		×	×												
(4)	SO-350180-203-090612-SC-VHCC-004	soil 9/	9/6/2012 9	9-6-12 1339 1-bag	1-bag	은		×	×										-		
(3)	SO-350180-203-090612-SC-VHCC-005	lios	9/6/2012 9-	9-6-12 1345 1-bag	1-bag	2		×	×								-				
								-											-		
												_		-			ļ				
																			_		
me Zone (Circle): t	fime Zone (Circle): EST CST WST PST Matrix: O = oil S = soil	O=oil S=soil NS≈non-soilsolid W=water L≠liquid E=extract F=filter	W = water L	≠liquid E=ex	ract F=	filter	L.,										-		ŀ		-
or metals or anic	or metals or anions, please detail analytes below.	-		[7	ĺ	Š	SIGNATURE	J.			PRIN	PRINTED NAME		_	DATE		TIME	- 1
omments:	Copies to:	QC PACKAGE (check below)	check below)		필	RELINQUISHED BY	ED BY	3	spekon m	ž	200	6	5/2	Man.	Staphan m Corning	2.2	/د	8/0/12		0060	0
stager@senesusa.ca	.ca	X	LEVEL II (Standard QC)	Ω.		RECEIVED BY	ED BY	Za	duen	Z	100	13	17a/n	ren	Kaluren Schmitt	14	1/1	4/10/12		09.30	
liles@senesusa.com	om	LEVE	LEVEL III (Std QC + forms)	ms)	REL	RELINQUISHED BY	ED BY														
of		LEVE	LEVEL IV (Std QC + forms + raw data)	statio		RECEIVED BY	:0 BY														
dold excess sample materials"	le materials"			 -	REL	RELINGUISHED BY	YB G			ĺ			L	1	Printers of the Contract of th		L		H		

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINGUISHED BY	RELINQUISHED BY STORDEN MELLING STORMEN M. COSTULING 9/1/12 0900	Stacken m Corning	8/11/13	0060
RECEIVED BY	Janen Schit	Lauren Schmitt	9/10/12 0930	09.30
RELINQUISHED BY)			
RECEIVED BY				
RELINQUISHED BY	A CONTRACTOR OF THE CONTRACTOR	mandament (1) (1) or one of the anti-proposition of the property for the property of the prope		
RECEIVED BY				

1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

Hold excess sample materials" reservative Key: 1.HCI 2-HN03



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

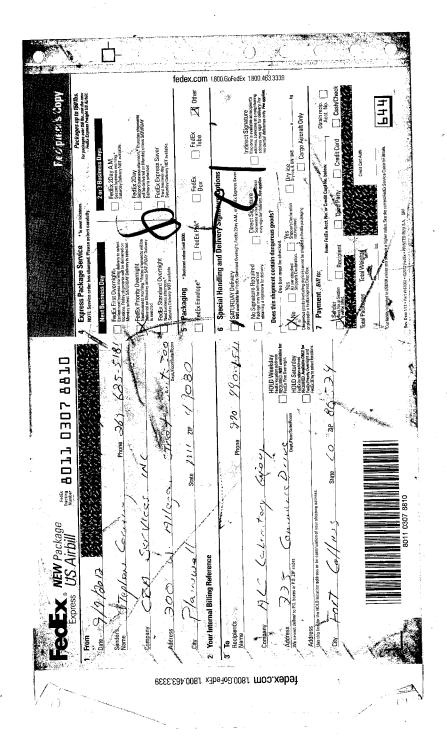
	(~ ~ ~ /	Client:	SENE	Ś	Worko	rder No:	120	1909	8	
	Project M	fanager:	UR	۷		Initials:	iAS		9/10/	<u>1</u> 2
1.	Does this pro	ject requir	e any special handlin	g in addition to sta	ndard ALS proc	edures?			YES	(NO)
2.	Are custody	seals on	shipping container	s intact?				NONE	YES	NO
3.	Are Custody	seals on	sample containers	intact?		-		NONE	YES	NO
4	Is there a CC	OC (Chair	n-of-Custody) pres	ent or other repre	sentative docu	ments?			YES	NO
5.	Are the CO	and boti	le labels complete	and legible?					(YES)	NO
6.			ent with samples re quested analyses, e		tes, times, no. o	of sample	s, no. of		(FES)	NO
7.	Were airbills	s / shippii	ng documents prese	ent and/or remov	able?			DROP OFF	(YES)	NO
8.	Are all aqueo	us samples	requiring preservati	on preserved corre	ctly? (excluding	volatiles))	(N/A)	YES	NO
9.	Are all aque	ous non-p	reserved samples j	Н 4-9?				N/A)	YES	NO
10	Is there suffi	icient san	ple for the request	ed analyses?					(YES)	NO
11.	Were all san	nples plac	ed in the proper co	ntainers for the i	equested analy	yses?			(YES)	NO
12	Are all samp	oles within	n holding times for	the requested an	alyses?				(YES)	NO
13.	Were all san	nple conta	iners received inta	ct? (not broken	or leaking, etc.	.)			YES	NO
14.	Are all samp headspace fr		ing no headspace (VOC, GRO, RS _ < green pea	K/MEE, Rx Cl > green		n)	N/A)	YES	NO
15.	Do any wate	•	contain sediment?	moderate	heavy	A	mount	N/A	YES	NO
16.	Were the sar								YES	(NO)
			ures measured at 0	1-6.0°C?	IR gun used*:	#2	#4	RAD	YES	NO
		temperat	Cooler #:	1	IK gun usea+:	#2	#4	ONLY	113.7	(110)
			Temperature (°C):	Ana						
	7	No of and	ody seals on cooler:	1000 —						
	DOT Survey/ Acceptance			12-		 -				
	Information		ernal µR/hr reading:							
			ound µR/hr reading:			\				
	-	_	≤ two times background a			/	(If no. see			
A.	dditional infol	rmation:	PROVIDE DETAILS BE	LOW FOR A NO RES	SPONSE TO ANY (QUESTION	ABOVE, EX	CEPT#1 AN	VD #16.	
-										
_										

				·						
fa	applicable, was t	he client co	ntacted? YES / NO	A Contact:				Date/Tin	ne:	
Pr	roject Manage	r Signatuı	e / Date:	110	9/10/12					
					1 (
			*	R Gun #2: Oakton S	N 20022500201.0	nee				1

Form 201r24.xls (06/04/2012)

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002

Page 1 of _____ 6 of 11



Total THORIUM

Method SW6020 Revision A

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: SENES Consultants Limited

Client Project ID: Church Rock Phase II SENES 350180-203

 Work Order Number:
 1209098
 Final Volume:
 100 ml

 Reporting Basis:
 Dry Weight
 Matrix:
 SOIL

 Prep Method:
 SW3050B
 Result Units:
 UG/KG

Analyst: Ross Miller

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
SO-350180-203-090612-SC-	1209098-1	09/06/2012	09/12/2012	09/13/2012	1.3	10	14000	20		1.017 g
SO-350180-203-090612-SC-	1209098-2	09/06/2012	09/12/2012	09/13/2012	0.4	10	15000	20		1.02 g
SO-350180-203-090612-SC-	1209098-3	09/06/2012	09/12/2012	09/13/2012	0.7	10	20000	20		1.014 g
SO-350180-203-090612-SC-	1209098-4	09/06/2012	09/12/2012	09/13/2012	1.0	10	21000	20		1.005 g
SO-350180-203-090612-SC-	1209098-5	09/06/2012	09/12/2012	09/13/2012	1.0	10	23000	20		1.036 g

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: im1209098-1

Date Printed: Monday, September 24, 2012

ALS Environmental -- FC

LIMS Version: 6.613

Page 1 of 2

Total URANIUM

Method SW6020 Revision A

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: SENES Consultants Limited

Client Project ID: Church Rock Phase II SENES 350180-203

 Work Order Number:
 1209098
 Final Volume:
 100 ml

 Reporting Basis:
 Dry Weight
 Matrix:
 SOIL

 Prep Method:
 SW3050B
 Result Units:
 UG/KG

Analyst: Ross Miller

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
SO-350180-203-090612-SC-	1209098-1	09/06/2012	09/12/2012	09/13/2012	1.3	10	560	10		1.017 g
SO-350180-203-090612-SC-	1209098-2	09/06/2012	09/12/2012	09/13/2012	0.4	10	650	9.8		1.02 g
SO-350180-203-090612-SC-	1209098-3	09/06/2012	09/12/2012	09/13/2012	0.7	10	780	9.9		1.014 g
SO-350180-203-090612-SC-	1209098-4	09/06/2012	09/12/2012	09/13/2012	1.0	10	800	10		1.005 g
SO-350180-203-090612-SC-	1209098-5	09/06/2012	09/12/2012	09/13/2012	1.0	10	940	9.8		1.036 g

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: im1209098-1

Date Printed: Monday, September 24, 2012

ALS Environmental -- FC

LIMS Version: 6.613

Page 2 of 2

ICPMS Metals

Method SW6020A Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1209098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: IP120912-5MB

Sample Matrix: SOIL % Moisture: N/A Date Collected: N/A

QCBatchID: IP120912-5-2 Run ID: IM120913-11A1 Date Extracted: 12-Sep-12 Cleanup: NONE Date Analyzed: 13-Sep-12 Basis: N/A Prep Method: SW3050 Rev B File Name: 006SMPL.

Prep Batch: IP120912-5

Sample Aliquot: 1 g Final Volume: 100 ml Result Units: UG/KG Clean DF:

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-29-1	THORIUM	10	20	20	U	
7440-61-1	URANIUM	10	10	10	U	

Data Package ID: im1209098-1

ICPMS Metals

Method SW6020A **Laboratory Control Sample**

Lab Name: ALS Environmental -- FC

Work Order Number: 1209098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: IP120912-5LCS

Sample Matrix: SOIL % Moisture: N/A Date Collected: N/A Date Extracted: 09/12/2012

Run ID: IM120913-11A1 Cleanup: NONE Date Analyzed: 09/13/2012 Prep Method: SW3050B

Basis: N/A File Name: 007SMPL.

Prep Batch: IP120912-5

QCBatchID: IP120912-5-2

Sample Aliquot:

Final Volume:

Result Units: UG/KG

Clean DF:

1 g

100 ml

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-29-1	THORIUM	1000	967	20		97	80 - 120%
7440-61-1	URANIUM	1000	1030	10		103	80 - 120%

Data Package ID: im1209098-1



Gamma Spectroscopy Case Narrative

SENES Consultants Limited

Church Rock Phase II – SENES 350180-203

Work Order Number: 1209098

- The following report consists of analytical results for five soil samples received by ALS on 09/10/2012.
- 2. These samples were prepared according to the current revision of SOP 739. The samples were sealed in steel cans on 09/11/2012 and stored for at least 21 days to allow ²²²Rn to approach secular equilibrium with its parent, ²²⁶Ra. The degree of in-growth achieved prior to analysis on 10/02/2012 is at least 97.8%. Conservatively assuming a radon emanation efficiency of approximately 50%, the effective radon progeny in-growth for these samples would be greater than 98.9%.
- 3. The samples were analyzed for the presence of gamma emitting radionuclides according to the current revision of SOP 713. The analyses were completed on 10/02/2012.
- 4. The results for these samples are reported on a "Dry Weight" basis in units of pCi/gram.
- 5. ALS has observed a reproducible low bias in ²²⁶Ra results (about -30% for the geometry in question) when using a mixed gamma source for the calibration of HPGe detectors for solid samples. This bias is eliminated by calibration using a NIST traceable ²²⁶Ra source in the same geometry and configuration as the samples.
- 6. The library used for calibration and analysis employs multiple peaks for the ²²⁶Ra progeny, ²¹⁴Pb (352 and 295 keV) and ²¹⁴Bi (609 and 1120 keV). Using these peaks avoids the use of the problematic ²²⁶Ra photo-peak at 186 keV, which suffers from poorly resolvable interference from ²³⁵U at the same energy. Final activity results for ²²⁶Ra are calculated, using the uncertainty-weighted mean of the activities for the four photo-peaks, by the Seeker gamma spectroscopy software assuming secular equilibrium.
- No problems were encountered with either the client samples or the associated quality control samples. All quality control criteria were met.



The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Linda Arend

D:

Radiochemistry Primary Data Reviewer

Raging from Stry Final Data Reviewer

Date Date

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1209098

Client Name: SENES Consultants Limited Client Project Name: Church Rock Phase II

Client Project Number: SENES 350180-203

Page 1 of 1

Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
SO-350180-203-090612-SC-VHC	1209098-1		SOIL	06-Sep-12	13:25
SO-350180-203-090612-SC-VHC	1209098-2		SOIL	06-Sep-12	13:28
SO-350180-203-090612-SC-VHC	1209098-3		SOIL	06-Sep-12	13:33
SO-350180-203-090612-SC-VHC	1209098-4		SOIL	06-Sep-12	13:39
SO-350180-203-090612-SC-VHC	1209098-5	_	SOIL	06-Sep-12	13:45

Date Printed: Thursday, October 04, 2012



Chain-of-Custody

ALS Laboratory Group
225 Commerce Drive, Fort Collins, Colorado 80524
TE. (800), 443-1511 PH. (970), 450-1512

1209098	
WORKORDER #	

Form 202r8

(ALS)		SAMPL	SAMPLER Stephen Corning	n Corning					DATE	Septe	September 6 2012	PAGE	- (₹	-
PROJECT NAME	PROJECT NAME Church Rock Phase II	SITE	SITE ID VHCC-1" gravel	" gravel				TURNA	TURNAROUND		15days	 DISPOSAL ((By Lab) or	1	Return to Client
PROJECT No.	SENES 350180-203	EDD FORMAT	ΙΑΤ				_						-		
		PURCHASE ORDER Account Number 816126858	ER Accoun	t Number 81612	6858		Ι					 			
COMPANY NAME	SENES	BILL TO COMPANY SENES Consultants Limited	NY SENES	Consultants Lin	nited		-					 			
SEND REPORT TO	Darrell Liles	INVOICE ATTN TO Andrea Pegg	TO Andrea	Pegg			-								
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDRE	SS 121 Gra	ADDRESS 121 Granton Dr., Unit #12	12		Γ								
CITY / STATE / ZIP	Englewood, CO 80112	CITY / STATE /	ZIP Richmo	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	3N4		Γ								
PHONE	PHONE (303) 521-1406	OH4	PHONE (905) 764-9380	4-9380			_	****							-
FAX		ŭ.	FAX (905) 764-9386	4-9386			·								
E-MAIL	diiles@senesusa.com	E-MAIL		apegg@senes ca											
Lab 10	Field ID	Matrix	Sample Date	Sample Time	Sample Pres.	res.	77 928-AЯ	letoT muinsıU	41						
Θ	SO-350180-203-090612-SC-VHCC-001	soil 6	9/6/2012	9-6-12 1325 1-bag		no	×	×	×						
~	SO-350180-203-090612-SC-VHCC-002	soil 6	9/6/2012	9-6-12 1328 1-bag		no	*	×	×						
(e)	SO-350180-203-090612-SC-VHCC-003	soil 6	9/6/2012	9-6-12 1333 1-bag		no	×	×	×						
4	SO-350180-203-090612-SC-VHCC-004	soil 9	9/6/2012	9-6-12 1339 1-bag		ou	×	×	×						
(P)	SO-350180-203-090612-SC-VHCC-005	soil 6	9/6/2012	9-6-12 1345	1-bag	no	×	×	×						
Fime Zone (Circle):	fine Zone (Gircle): EST CST 442D PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter	il NS ≈ non-soil solid	W = water	L ≈ liquid € = e)	xtract F ≠ fil	ter									

ime Zone (Gircle): EST CST WSTA PST Matrix: O = oil or metals or anions, please detail analytes below.

omments:	Copies to:	es to:				8	PACK	QC PACKAGE (check below)
stager@senesusa.ca	a ca					ļ	×	X LEVEL II (Standard QC)
liles@senesusa.com	COM					<u> </u>	_	LEVEL III (Std QC + forms)
4								LEVEL IV (Std QC + forms + raw data)
नold ⊈xcess sample materials"	ple mat	terials"						
reservative Key: 1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035	1.HCI	2-HNO3	3-H2SO4	4-NaOH	5-NaHSO4	7-Other	8-4 d	egrees C 9-5035

•				
	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	RELINQUISHED BY Staplan Maring Staphen in Corning 9/11/12 0900	Staphen m Corning	8/6/6	0060
RECEIVED BY	Janen Vilia	Kaluren Schmitt	8/10/12 0930	09.30
RELINQUISHED BY			?	
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				
	The state of the s			



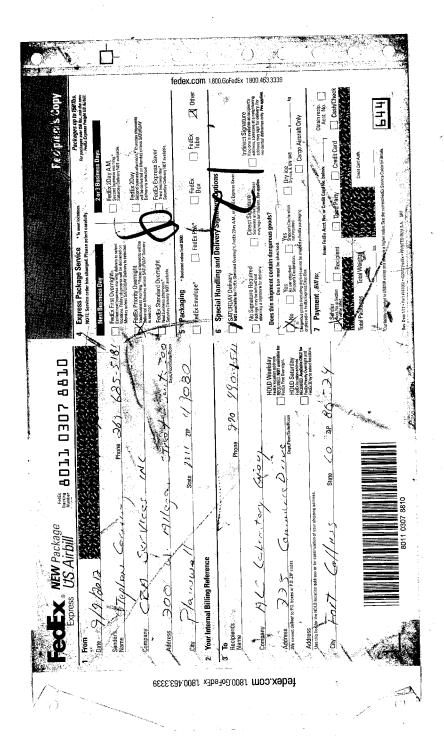
ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

	(ALS)	200	d	
	Client: SENES Workorder No: 120	909	8	_
	Project Manager: JRK Initials: <u>US</u>	Date:	9/10L	12
1.	Does this project require any special handling in addition to standard ALS procedures?		YES	(NO
2.	Are custody seals on shipping containers intact?	(NONE)	YES	NO
3.	Are Custody seals on sample containers intact?	NONE	YES	NO
4	Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
5.	Are the COC and bottle labels complete and legible?		(YES)	NO
6.	Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		(FES)	NO
7.	Were airbills / shipping documents present and/or removable?	DROP OFF	(YES)	NO
8.	Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
9.	Are all aqueous non-preserved samples pH 4-9?	N/A)	YES	NO
10.	Is there sufficient sample for the requested analyses?		(YES)	NO
11.	Were all samples placed in the proper containers for the requested analyses?		(YES)	NO
	Are all samples within holding times for the requested analyses?		(YES)	NO
13.	Were all sample containers received intact? (not broken or leaking, etc.)	1	YES	NO
	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon)			
	headspace free? Size of bubble: < green pea > green pea	(N/A)	YES	NO
15.	Do any water samples contain sediment? Amount			
	Amount of sediment: dusting moderate heavy	(N/A)	YES	NO
16.	Were the samples shipped on ice?		YES	(NO
17.	Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	RAD	YES	NO
	Cooler #:	ONLY		
	Temperature (°C): Amb			
	No. of custody seals on cooler:			
	DOT Survey/ Acceptance External µR/hr reading: 12			
	Information			
	Background μR/hr reading:			
	Were external µR/hr readings ≤ two times background and within DOT acceptance criteria YES NO / NA (If no. see Iditional Information: PROVIDE DFTAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EX			
-3.0	records throughout Provide Details below for a no response to any Question above, Exc	CEPT #1 AN	ID #16.	
-				
_				
		-		
fa	applicable, was the client contacted? YES / NO NA Contact:	Date/Tin	ne:	
Pr	oject Manager Signature / Date: 9/10/17			

Form 201r24.xls (06/04/2012)

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002

Page 1 of _____ **5 of 13**



PAI 713 Rev 12 **Method Blank Results**

Lab Name: ALS Environmental -- FC

Work Order Number: 1209098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: GS120910-1MB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Prep Batch: GS120910-1 QCBatchID: GS120910-1-1 Final Aliquot: 215 g Result Units: pCi/g File Name: 120912d05

Library: RA226.LIB

Date Collected: 10-Sep-12 Date Prepared: 10-Sep-12

Run ID: GS120910-1A Count Time: 30 minutes

Date Analyzed: 02-Oct-12

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	-0.03 +/- 0.17	0.32	1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: GSS1209098-1

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Date Printed: Thursday, October 04, 2012

PAI 713 Rev 12

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1209098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: GS120910-1LCS

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Prep Batch: GS120910-1 QCBatchID: GS120910-1-1 Final Aliquot: 215 g Result Units: pCi/g File Name: 121239d10

Library: RA226.LIB

Date Collected: 10-Sep-12 Date Prepared: 10-Sep-12

Run ID: GS120910-1A Count Time: 30 minutes

Date Analyzed: 02-Oct-12

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	449 +/- 53	2	469.5	95.6	85 - 115	P,M3

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

LT - Result is less than Requested MDC, greater than sample specific MDC. Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits. M - The requested MDC was not met. M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC. TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

Data Package ID: GSS1209098-1

Date Printed: Thursday, October 04, 2012

ALS Environmental -- FC

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

Page 1 of 1

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209098-1

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Date Collected: 06-Sep-12

Date Prepared: 10-Sep-12

Date Prepared: 10-Sep-12 Date Analyzed: 02-Oct-12 Prep Batch: GS120910-1 QCBatchID: GS120910-1-1

Run ID: GS120910-1A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 230 g
Prep Basis: Dry Weight
Moisture(%): NA

Moisture(%): NA Result Units: pCi/g File Name: 121367d01

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.33 +/- 0.29	0.37	1	

Comments:

Qualifiers/Flags:

 $\ensuremath{\mathsf{U}}\xspace$ - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209098-1

Date Printed: Thursday, October 04, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

Page 1 of 5

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209098-2

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 06-Sep-12
Date Prepared: 10-Sep-12
Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1 QCBatchID: GS120910-1-1

Run ID: GS120910-1A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 229 g Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121387d02

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.33 +/- 0.28	0.44	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209098-1

Date Printed: Thursday, October 04, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

Page 2 of 5

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209098-3

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 06-Sep-12
Date Prepared: 10-Sep-12
Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1 QCBatchID: GS120910-1-1 Run ID: GS120910-1A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 199 g
Prep Basis: Dry Weight
Moisture(%): NA

Result Units: pCi/g
File Name: 121616d04

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.92 +/- 0.39	0.55	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209098-1

Date Printed: Thursday, October 04, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

Page 3 of 5

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209098-4

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 06-Sep-12
Date Prepared: 10-Sep-12

Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1

QCBatchID: GS120910-1-1 Run ID: GS120910-1A Count Time: 30 minutes

Report Basis: Dry Weight

Final Aliquot: 231 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 120910d05

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.48 +/- 0.27	0.38	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209098-1

Date Printed: Thursday, October 04, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

Page 4 of 5

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209098-5

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 06-Sep-12

Date Prepared: 10-Sep-12 Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1 QCBatchID: GS120910-1-1

Run ID: GS120910-1A Count Time: 30 minutes Report Basis: Dry Weight

Final Aliquot: 232 g Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121368d01

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.96 +/- 0.36	0.48	1	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209098-1

Date Printed: Thursday, October 04, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

Page 5 of 5

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1209099

Client Name: SENES Consultants Limited

Client Project Name: Church Rock Phase II Client Project Number: SENES 350180-203

Client PO Number: Account Number 816126858

Report Due Date: 10/10/2012

Client Sample Number	Lab Sample Number	Test Group	COC Number	Matrix	Date Collected	Time Collected
SO-350180-203-090612-SC-Eas	1209099-1	1		SOIL	06-Sep-12	11:30
SO-350180-203-090612-SC-Eas	1209099-2	1		SOIL	06-Sep-12	11:36
SO-350180-203-090612-SC-Eas	1209099-3	1		SOIL	06-Sep-12	11:50
SO-350180-203-090612-SC-Eas	1209099-4	1	· vvasta	SOIL	06-Sep-12	11:58
SO-350180-203-090612-SC-Eas	1209099-5	1	11-0-1	SOIL	06-Sep-12	12:03
SO-350180-203-090612-SC-Eas	1209099-6	1		SOIL	06-Sep-12	12:11
SO-350180-203-090612-SC-Eas	1209099-7	1		SOIL	06-Sep-12	12:20
SO-350180-203-090612-SC-Eas	1209099-8	1		SOIL	06-Sep-12	12:28
SO-350180-203-090612-SC-Eas	1209099-9	1		SOIL	06-Sep-12	12:35
SO-350180-203-090612-SC-Eas	1209099-10	1		SOIL	06-Sep-12	12:45

^{**}Designated QC

Analytical Methods by Test Group

Test Group: 1

Ra_226/228 SOP642

SW6020



ALS Laboratory Group
225 Commerce Drive, Fort Collins, Colorado 80524
TF: (800) 443-1511 PH: (970) 450-1511 PX (970) 460-1522

Chain-of-Custody

WORKORDER (3090 099

									Form 202r8		•		۔ د
(ALS)		SAM	SAMPLER Stephen Corning	n Corning			white No.	DATE	September 6 2012	PAGE	-(of	-
PROJECT NAME	PROJECT NAME Church Rock Phase II	IS.	SITE ID McConnel East Pit	nel East Pit			μ.	TURNAROUND	15days	DISPOSAL	By Lab	or Retu	Return to Client
PROJECT No.	SENES 350180-203	EDD FORMAT	CMAT										
		PURCHASE OF	EDER Accoun	PURCHASE ORDER Account Number 816126858	6858		Τ						
COMPANY NAME	SENES	BILL TO COM	PANY SENES	BILL TO COMPANY SENES Consultants Limited	nited		I						
SEND REPORT TO	Darrell Liles	INVOICE ATT	INVOICE ATTINTO Andrea Pegg	Pegg									
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDE	TESS 121 Gr	ADDRESS 121 Granton Dr., Unit #12	12		T						
CITY / STATE / ZIP	Englewood, CO 80112	CITY / STATE	/ ZIP Richm	CITY (STATE / ZIP Richmond Hill, ON L4B 3N4	3N4		r						
PHONE	PHONE (303) 521-1406	8	PHONE (905) 764-9380	54-9380									
F&			FAX (905) 7	(905) 764-9386									
E-MAIL	diiles@senesusa.com	J.	E-WAIL apego	apedd@senes.ca			Γ						
G P I	Feld ID	Watrix	Sample Date	Sample Time	# Sample Pres.	.es.	9Z5-AЯ	ListoT mulinerU AT					
9	SO-350180-203-090612-SC-East Pit- 001	soil	9/6/2012	9-6-12 1130	1-bag	2	×	×					
(0)	SO-350180-203-090612-SC-East Pit- 002	lios	9/6/2012	9-6-12 1136 1-bag	1-bag	은	×	×					
(<u>o</u>	SO-350180-203-090612-SC-East Pit- 003	soil	9/6/2012	9-6-12 1150	1-bag	2	×	×					
4	SO-350180-203-090612-SC-East Pit- 004	soil	9/6/2012	9-6-12 1158	1-bag	2	×	×					
(9)	SO-350180-203-090612-SC-East Pit- 005	soil	9/6/2012	9-6-12 1203	1-bag	91	×	×					
(-)	SO-350180-203-090612-SC-East Pit- 006	soil	9/6/2012	9-6-12 1211	1-bag	2	×	×				-	
<u>(-)</u>	SO-350180-203-090612-SC-East Pit- 007	soil	9/6/2012	9-6-12 1220 1-bag	1-bag	2	×	×					
(3)	SO-350180-203-090612-SC-East Pit- 008	soil	9/6/2012	9-6-12 1228 1-bag	1-bag	92	×	×					
(3)	SO-350180-203-090612-SC-East Pit-	soil	9/6/2012	9-6-12 1235 1-bag	1-bag	2	×	×					
(10)	SO-350180-203-090612-SC-East Pit-	soil	9/6/2012	9-6-12 1245 1-bag	1-bag	2	×	×					
Time Zone (Circle): E	EST CST MST PST Matrix O = oil S = soi	O = oil S = soil NS = non-soil soild W = water L = liquid E = extract F = filter	id W=water	L¤liquid E≖e	dract F≖f	liter							
or metals or anic	For metals or anions, please detail analytes below.						· ·	SIGNATURE		PRINTED NAME	DATE	ш	TIME

"Hold excess sample materials"

Preservative Key: 1-HCl 2-HN03 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035 For metals or anions, please deta

Comments: Copies to: rstager@senesusa.ca diles@senesusa.com Preservative Key:

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	RELINQUISHED BY & Liker Pr Gening	572,5hew m Corning 9/7/12 0900	0/6/6	0060
RECEIVED BY	Physical Mark	0860 4/01/P 3/10/12 0930	T1/01/6	0860
RELINQUISHED BY				
RECEIVED BY				
RELINGUISHED BY				
RECEIVED BY				ı



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: SENES Workorder No: 120	909	9	
Project Manager: JRK Initials: LAS	Date:	9/10/	12
Does this project require any special handling in addition to standard ALS procedures?		YES	NO
2 Are custody seals on shipping containers intact?	NONE	YES	NO
3. Are Custody seals on sample containers intact?	NONE	YES	NO
4 Is there a COC (Chain-of-Custody) present or other representative documents?	.l,	YES	NO
5. Are the COC and bottle labels complete and legible?		(YES)	NO
6 Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		(FES)	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	(YES)	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A)	YES	NO
10. Is there sufficient sample for the requested analyses?		(YES)	NO
11. Were all samples placed in the proper containers for the requested analyses?		(YES)	NO
12. Are all samples within holding times for the requested analyses?		(YES)	NO
Were all sample containers received intact? (not broken or leaking, etc.)		YES	(NO) *
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea > green pea	N/A)	YES	NO
15. Do any water samples contain sediment? Amount of sediment: dusting moderate heavy	N/A	YES	NO
16. Were the samples shipped on ice?	J	YES	(NO)
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun uscd*: #2 #4	RAD	YES	NO
Cooler #: Temperature (°C): AMB No. of custody seals on cooler: Dot survey/ Acceptance Information External μR/hr reading: Background μR/hr reading: Were external μR/hr readings ≤ two times background and within DOT acceptance criterial YES) NO/NA (If no. see Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EX **** **** **** **** **** ***** ***** ****	Form 008.)	ND #16.	
If applicable, was the client contacted? YES / NO / NA Contact: Project Manager Signature / Date:	Date/Ti	me:	

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002



Metals Case Narrative

SENES Consultants Limited

Church Rock Phase II – SENES 350180-203

Work Order Number: 1209099

- 1. This report consists of 10 soil samples.
- 2. The samples were received intact at ambient temperature by ALS on 9/10/12.
- 3. The samples were prepared and analyzed based on SW-846, 3rd Edition procedures.

For analysis by ICP-MS, the samples were digested following method 3050B and the current revision of SOP 806.

- 4. Analysis by ICP-MS followed method 6020A and the current revision of SOP 827.
- All standards and solutions are NIST traceable and were used within their recommended shelf life.
- 6. The samples were prepared and analyzed within the established hold times.

All in house quality control procedures were followed, as described below.

- 7. General quality control procedures.
 - A preparation (method) blank and laboratory control sample were digested and analyzed with the samples in this digestion batch.
 - The preparation (method) blank associated with this digestion batch was below the reporting limit for the requested analytes.
 - All laboratory control sample criteria were met.
 - All initial and continuing calibration blanks were below the reporting limit for the requested analytes.
 - All initial and continuing calibration verifications were within the acceptance criteria for the requested analytes.



- The interference check samples associated with Method 6020A were analyzed.
- 8. Matrix specific quality control procedures.

Per method requirements, matrix QC was performed for this analysis. Since a sample from this order number was not the selected quality control (QC) sample, matrix specific QC results are not included in this report.

9. It is a standard practice that samples for ICP-MS are analyzed at a dilution.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

lill i atelle

Inorganics Primary Data Reviewer

Date

Inorganits Final Data Reviewer

Date



Inorganic Data Reporting Qualifiers

The following qualifiers are used by the laboratory when reporting results of inorganic analyses.

- Result qualifier -- If the analyte was analyzed for but not detected a "U" is entered.
- QC qualifier -- Specified entries and their meanings are as follows:
 - E The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
 - M Duplicate injection precision was not met.
 - N Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
 - Z Spiked recovery not within control limits. An explanatory note may be included in the narrative.
 - * Duplicate analysis (relative percent difference) not within control limits.
 - S SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1209099

Client Name: SENES Consultants Limited

Client Project Name: Church Rock Phase II Client Project Number: SENES 350180-203

Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
SO-350180-203-090612-SC-East	1209099-1		SOIL	06-Sep-12	11:30
SO-350180-203-090612-SC-East	1209099-2		SOIL	06-Sep-12	11:36
SO-350180-203-090612-SC-East	1209099-3		SOIL	06-Sep-12	11:50
SO-350180-203-090612-SC-East	1209099-4		SOIL	06-Sep-12	11:58
SO-350180-203-090612-SC-East	1209099-5		SOIL	06-Sep-12	12:03
SO-350180-203-090612-SC-East	1209099-6		SOIL	06-Sep-12	12:11
SO-350180-203-090612-SC-East	1209099-7		SOIL	06-Sep-12	12:20
SO-350180-203-090612-SC-East	1209099-8		SOIL	06-Sep-12	12:28
SO-350180-203-090612-SC-East	1209099-9	•	SOIL	06-Sep-12	12:35
SO-350180-203-090612-SC-East	1209099-10	<u> </u>	SOIL	06-Sep-12	12:45

Page 1 of 1

Date Printed: Monday, September 24, 2012

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ALS Laboratory Group

Chain-of-Custody

WORKORDER

of 1 Return to Client 209000 By Lab DISPOSAL (September 6 2012 15days DATE TURNAROUND × × × × × × × × × × × Uranium Total × × × × 84-226 မ Pres. 2 9 2 2 2 2 2 2 9 6 1-bag 1-bag 1-bag 1-bag 1-bag 9-6-12 1228 1-bag 9-6-12 1245 1-bag 9-6-12 1150 1-bag 9-6-12 1220 1-bag 9-6-12 1235 1-bag PURCHASE ORDER Account Number 816126858 SENES Consultants Limited CITY / STATE / ZIP Richmond Hill, ON L4B 3N4 ADDRESS 121 Granton Dr., Unit #12 9-6-12 1130 9-6-12 1203 9-6-12 1211 9-6-12 1136 9-6-12 1158 Sample Time apegg@senes.ca SITE ID McConnel East Pit SAMPLER Stephen Corning (905) 764-9380 (905) 764-9386 Andrea Pegg 9/6/2012 9/6/2012 9/6/2012 9/6/2012 9/6/2012 9/6/2012 9/6/2012 9/6/2012 9/6/2012 9/6/2012 Sample Date PHONE Ā BILL TO COMPANY INVOICE ATTN TO E-MAIL **EDD FORMAT** Matrix soil 225 Commerce Drive, Fort Collins, Colorado 80524 TF. (800) 443-1511 PH: (970) 490-1511 FX. (870) 490-1522 007 SO-350180-203-090612-SC-East Pit-008 SO-350180-203-090612-SC-East Pit-009 SO-350180-203-090612-SC-East Pit-003 SO-350180-203-090612-SC-East Pit-004 SO-350180-203-090612-SC-East Pit-005 SO-350180-203-090612-SC-East Pit-006 SO-350180-203-090612-SC-East Pit-001 SO-350180-203-090612-SC-East Pit-002 SO-350180-203-090612-SC-East Pit-SO-350180-203-090612-SC-East Pit-Suite 3014 Englewood, CO 80112 Field ID diles@senesusa.com PROJECT NAME CHUICH ROCK Phase II PROJECT NO. SENES 350180-203 8310 S. Valley Hwy., PHONE (303) 521-1406 Darrell Liles SENES ADDRESS CITY / STATE / ZIP FAX E-MAR COMPANY NAME SEND REPORT TO Lab ID رص **(**ω) (₽ ω` (~) (໑` 4

or metals or anions, please detail analytes below

Matrix: 0 = oil S = soil

CST WET PRI

NS = non-soil solid W = water L = liquid E = extract F = fitter

QC PACKAGE (check below) Copies to: omments:

LEVEL III (Std QC + forms)
LEVEL IV (Std QC + forms + raw data) X LEVEL II (Standard QC) 8-4 degrees C 9-5035 1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other o John excess sample materials" stager@senesusa.ca iles@senesusa.com

reservative Key:

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINGUISHED BY	RELINQUISHED BY & Achora on Growing	STO, 24cm M Corning 8/7/13 0800	8/2/13	0800
RECEIVED BY	Mayor Hank	Laurenschmitt 19/10/12 10930	T1)01/6	0930
RELINQUISHED BY		The state of the s		
RECEIVED BY				
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RECEIVED BY				
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A

ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: SENES Workorder No: 120	909	9	
Project Manager: JRK Workorder No: 1750 Project Manager: JRK Initials: US		9/10	12
i. Does this project require any special handling in addition to standard ALS procedures?		YES	NO
2. Are custody seals on shipping containers intact?	NONE	YES	NO
3. Are Custody seals on sample containers intact?	NONE	YES	NO
4 Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
5. Are the COC and bottle labels complete and legible?		YES	NO
6 Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
8 Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	YES	NO
16. Is there sufficient sample for the requested analyses?		YES	NO
Were all samples placed in the proper containers for the requested analyses?		YES	NO
12. Are all samples within holding times for the requested analyses?		YES	NO
13 Were all sample containers received intact? (not broken or leaking, etc.)		YES	NO 7
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea > green pea	N/A	YES	NO
15. Do any water samples contain sediment? Amount of sediment: dusting moderateheavy	N/A	YES	NO
16. Were the samples shipped on ice?		YES	(NO)
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	RAD	YES	(NO)
Cooler #:	OHE		
Temperature (°C): Amb			
No. of custody seals on cooler:	-		
DOT Survey/ Acceptance External µR/hr reading: 13			-
Information Background µR/hr reading:			. —
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria YES NO / NA (If no. so	e Form 008.)	
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, I			
•			
(*13) 1209099-7 (East Pit-007) arrived with book	en Zi	pper.	
approximately 50% of Volume spilled into			E
cooler-PM notified - planty of volu	ne.	for	
analie			
If applicable, was the client contacted? (YE) / NO / NA Contact: Oart 1 1/2	Date/T	ime: _e	nil
Project Manager Signature / Date:			
/ 1			1

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002

Pour	dex.com 1800.GoFed	4 1	
FOOTY TO 150 Ibs.	⊠ Other	B echients echients weyboring weyboring weyboring wey, fee applies.	
RACIPICALIS, CODY RACIOGES SO TO ESSIBLE For an animal source of the s	Fedral Tube Tube Pedra Pedra Fedra Spire.	Indirect S This come is a second sec	To Control Con
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FECEX. NEW Package Fresh Boll 0307 9265 1 From Date 9/1/2012 Sander's STOPKO 11 Sate 111. 210 4/9080 5	Phone 978	1885 2 3 5 Call are at the Color of Call are at Call are at Call are at Call are at the Call are at Call a	Slaw Co ZP 80.73 4

Total THORIUM

Method SW6020 Revision A

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: SENES Consultants Limited

Client Project ID: Church Rock Phase II SENES 350180-203

 Work Order Number:
 1209099
 Final Volume:
 100 ml

 Reporting Basis:
 Dry Weight
 Matrix:
 SOIL

 Prep Method:
 SW3050B
 Result Units:
 UG/KG

Analyst: Ross Miller

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
SO-350180-203-090612-SC-	1209099-1	09/06/2012	09/13/2012	09/13/2012	2.6	10	2300	20		1.044 g
SO-350180-203-090612-SC-	1209099-2	09/06/2012	09/13/2012	09/13/2012	0.9	10	1300	20		1.018 g
SO-350180-203-090612-SC-	1209099-3	09/06/2012	09/13/2012	09/13/2012	4.4	10	1600	20		1.045 g
SO-350180-203-090612-SC-	1209099-4	09/06/2012	09/13/2012	09/13/2012	1.6	10	2200	20		1.01 g
SO-350180-203-090612-SC-	1209099-5	09/06/2012	09/13/2012	09/13/2012	1.1	10	1900	20		1.006 g
SO-350180-203-090612-SC-	1209099-6	09/06/2012	09/13/2012	09/13/2012	2.4	10	2400	20		1.046 g
SO-350180-203-090612-SC-	1209099-7	09/06/2012	09/13/2012	09/13/2012	1.8	10	1900	20		1.033 g
SO-350180-203-090612-SC-	1209099-8	09/06/2012	09/13/2012	09/13/2012	2.5	10	2200	20		1.004 g
SO-350180-203-090612-SC-	1209099-9	09/06/2012	09/13/2012	09/13/2012	1.9	10	1900	20		1.021 g
SO-350180-203-090612-SC-	1209099-10	09/06/2012	09/13/2012	09/13/2012	2.9	10	1500	20		1.013 g

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: im1209099-1

Date Printed: Monday, September 24, 2012 ALS Environmental -- FC

LIMS Version: 6.613

Page 1 of 2

Total URANIUM

Method SW6020 Revision A

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: SENES Consultants Limited

Client Project ID: Church Rock Phase II SENES 350180-203

 Work Order Number:
 1209099
 Final Volume:
 100 ml

 Reporting Basis:
 Dry Weight
 Matrix:
 SOIL

 Prep Method:
 SW3050B
 Result Units:
 UG/KG

Analyst: Ross Miller

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
SO-350180-203-090612-SC-	1209099-1	09/06/2012	09/13/2012	09/13/2012	2.6	10	620	9.8		1.044 g
SO-350180-203-090612-SC-	1209099-2	09/06/2012	09/13/2012	09/13/2012	0.9	10	210	9.9		1.018 g
SO-350180-203-090612-SC-	1209099-3	09/06/2012	09/13/2012	09/13/2012	4.4	10	210	10		1.045 g
SO-350180-203-090612-SC-	1209099-4	09/06/2012	09/13/2012	09/13/2012	1.6	10	370	10		1.01 g
SO-350180-203-090612-SC-	1209099-5	09/06/2012	09/13/2012	09/13/2012	1.1	10	250	10		1.006 g
SO-350180-203-090612-SC-	1209099-6	09/06/2012	09/13/2012	09/13/2012	2.4	10	290	9.8		1.046 g
SO-350180-203-090612-SC-	1209099-7	09/06/2012	09/13/2012	09/13/2012	1.8	10	230	9.9		1.033 g
SO-350180-203-090612-SC-	1209099-8	09/06/2012	09/13/2012	09/13/2012	2.5	10	290	10		1.004 g
SO-350180-203-090612-SC-	1209099-9	09/06/2012	09/13/2012	09/13/2012	1.9	10	240	10		1.021 g
SO-350180-203-090612-SC-	1209099-10	09/06/2012	09/13/2012	09/13/2012	2.9	10	210	10		1.013 g

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: im1209099-1

Date Printed: Monday, September 24, 2012 ALS Environmental -- FC

LIMS Version: 6.613

Page 2 of 2

ICPMS Metals

Method SW6020A Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: IP120913-3MB

Sample Matrix: SOIL % Moisture: N/A Date Collected: N/A

Date Extracted: 13-Sep-12 Date Analyzed: 13-Sep-12 Prep Method: SW3050 Rev B

Prep Batch: IP120913-3 Sample Aliquot: QCBatchID: IP120913-3-1 Final Volume: Run ID: IM120913-11A1 Result Units: UG/KG Cleanup: NONE Clean DF:

1 g

100 ml

Basis: N/A File Name: 061SMPL.

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-29-1	THORIUM	10	20	20	U	
7440-61-1	URANIUM	10	10	10	U	

Data Package ID: im1209099-1

ICPMS Metals

Method SW6020A Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: IP120913-3LCS

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A

Date Collected: N/A

Date Extracted: 09/13/2012

Date Analyzed: 09/13/2012

Date Analyzed: 09/13/2012 Prep Method: SW3050B

Prep Batch: IP120913-3 QCBatchID: IP120913-3-1

Run ID: IM120913-11A1 Cleanup: NONE

Basis: N/A File Name: 062SMPL.

Sample Aliquot:	1 g						
Final Volume:	100 ml						
Result Units: UG/KG							
Clean DF:	1						

L	.CS % Rec.	Control Limits	

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-29-1	THORIUM	1000	939	20		94	80 - 120%
7440-61-1	URANIUM	1000	1020	10		102	80 - 120%

Data Package ID: im1209099-1



Gamma Spectroscopy Case Narrative

SENES Consultants Limited

Church Rock Phase II – SENES 350180-203

Work Order Number: 1209099

- The following report consists of analytical results for 10 soil samples received by ALS on 09/10/2012.
- 2. These samples were prepared according to the current revision of SOP 739. The samples were sealed in steel cans on 09/11/2012 and stored for at least 21 days to allow ²²²Rn to approach secular equilibrium with its parent, ²²⁶Ra. The degree of in-growth achieved prior to analysis on 10/02/2012 is at least 97.8%. Conservatively assuming a radon emanation efficiency of approximately 50%, the effective radon progeny in-growth for these samples would be greater than 98.9%.
- 3. The samples were analyzed for the presence of gamma emitting radionuclides according to the current revision of SOP 713. The analyses were completed on 10/02/2012.
- 4. The results for these samples are reported on a "Dry Weight" basis in units of pCi/gram.
- Sample volumes were insufficient to allow preparation of duplicates. A duplicate analysis of samples 1209099-2 and -4 was performed in lieu of prepared duplicates.
- 6. ALS has observed a reproducible low bias in ²²⁶Ra results (about -30% for the geometry in question) when using a mixed gamma source for the calibration of HPGe detectors for solid samples. This bias is eliminated by calibration using a NIST traceable ²²⁶Ra source in the same geometry and configuration as the samples.
- 7. The library used for calibration and analysis employs multiple peaks for the ²²⁶Ra progeny, ²¹⁴Pb (352 and 295 keV) and ²¹⁴Bi (609 and 1120 keV). Using these peaks avoids the use of the problematic ²²⁶Ra photo-peak at 186 keV, which suffers from poorly resolvable interference from ²³⁵U at the same energy. Final activity results for ²²⁶Ra are calculated, using the uncertainty-weighted mean of the activities for the four photo-peaks, by the Seeker gamma spectroscopy software assuming secular equilibrium.



8. No problems were encountered with either the client samples or the associated quality control samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Linda Arend

Radiochemistry Primary Data Reviewer

Radidonemistry Final Data Reviewer

10-4-17

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1209099

Client Name: SENES Consultants Limited
Client Project Name: Church Rock Phase II
Client Project Number: SENES 350180-203

Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
SO-350180-203-090612-SC-East	1209099-1		SOIL	06-Sep-12	11:30
SO-350180-203-090612-SC-East	1209099-2		SOIL	06-Sep-12	11:36
SO-350180-203-090612-SC-East	1209099-3		SOIL	06-Sep-12	11:50
SO-350180-203-090612-SC-East	1209099-4		SOIL	06-Sep-12	11:58
SO-350180-203-090612-SC-East	1209099-5		SOIL	06-Sep-12	12:03
SO-350180-203-090612-SC-East	1209099-6		SOIL	06-Sep-12	12:11
SO-350180-203-090612-SC-East	1209099-7		SOIL	06-Sep-12	12:20
SO-350180-203-090612-SC-East	1209099-8		SOIL	06-Sep-12	12:28
SO-350180-203-090612-SC-East	1209099-9		SOIL	06-Sep-12	12:35
SO-350180-203-090612-SC-East	1209099-10		SOIL	06-Sep-12	12:45

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ALS Laboratory Group 225 Commerce Drve, Fort Collins, Colorado 80524 TF. (800) 445-1511 PH. (870) 450-1511 PX (870) 450-1522

Chain-of-Custody

мояковрея 1209 C gg

	225 Commerce Drive, Fort Collins, Colorado 80524 TF. (800) 443-1511 PH: (970) 490-1511 FX. (970) 490-1522	1522								Form 202r8	*	2000	<u>></u>)
(ALS)		SAMPLE	SAMPLER Stephen Corning					DATE	Septem	September 6 2012	PAGE	-(ð	-
PROJECT NAME	PROJECT NAME Church Rock Phase II	SITE	SITE ID McConnel East Pit				TURN	TURNAROUND	15	15days	DISPOSAL	By Lab or	1	Return to Client
PROJECT No.	SENES 350180-203	EDD FORMA	_											
		PURCHASE ORDE	PURCHASE ORDER Account Number 816126858	16126858										
COMPANY NAME	SENES	BILL TO COMPAN	BILL TO COMPANY SENES Consultants Limited	s Limited										
SEND REPORT TO	Darrell Liles	INVOICE ATTN TO Andrea Pegg	Andrea Pegg					-			,			
ADDRESS	8 8310 S. Valley Hwy., Suite 3014	ADDRESS	\$ 121 Granton Dr., Unit #12	it #12										
CITY / STATE / ZIP	Englewood, CO 80112	CITY / STATE / ZII	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	L4B 3N4										
PHONE	(303) 521-1406	NOHA	PHONE (905) 764-9380											
FAX		FAX	(905) 764-9386											
E-MAIL.	diles@senesusa.com	E-MAI	E-MAIL apegg@senes.ca	es.										
Lab ID	Field ID	Matrix	Sample Sample Date Time		sample Pres.	2	Ar-226 Uranium Total	чт						
9	SO-350180-203-090612-SC-East Pit-	lios	9/6/2012 9-6-12 1130	30 1-bag	ou f		×	×						
(O)	SO-350180-203-090612-SC-East Pit-	soil 9/	9/6/2012 9-6-12 1136	136 1-bag	ou E	-	×	×						
(e)	SO-350180-203-090612-SC-East Pit-	lios	9/6/2012 9-6-12 1150 1-bag	50 1-ba	ou E		×	×						
4	SO-350180-203-090612-SC-East Pit-	lios	9/6/2012 9-6-12 1158	158 1-bag	9		×	×						
(2)	SO-350180-203-090612-SC-East Pit-	/6 lios	9/6/2012 9-6-12 1203 1-bag	203 1-ba	0		×	×						
(e)	SO-350180-203-090612-SC-East Pit- 006	lios	9/6/2012 9-6-12 1211	11-bag	ou 6		×	×						
(<u>-</u>)	SO-350180-203-090612-SC-East Pit- 007	lios	9/6/2012 9-6-12 1220 1-bag	220 1-ba	ou 6		×	×						
(%)	SO-350180-203-090612-SC-East Pit-	lios	9/6/2012 9-6-12 1228 1-bag	228 1-ba	OU B		×	×						
6	SO-350180-203-090612-SC-East Pit- 009	/6 lios	9/6/2012 9-6-12 1235 1-bag	35 1-ba	ou B		×	×						
(ot	SO-350180-203-090612-SC-East Pit-	lios	9/6/2012 9-6-12 1245 1-bag	45 1-ba	ou 6		×	×						
Fime Zone (Circle):	EST CST WELL PST Matrix: 0 = oil S = so	NS = non-soil solid	e oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter	= extract	F = filter	L							-	
or metals or an	or metals or anions, please detail analytes below.							SIGNATURE	<u></u>	ď.	PRINTED NAME	DA	DATE	TIME
omments:	Copies to:	QC PACKAGE (check below)	check below)	•	RELINQUISHED BY	HED BY	8	Lesbore or Green	gruins	576,00	Stepshen Mlonin	2/2/12		0800
stager@senesusa.ca	sa.ca	X LEVE	LEVEL II (Standard QC)		RECE	RECEIVED BY	Par	er th	Ank	Laurer	M. Klauvenschmitz	T1/01/6	0 21	0330
moo esusenes@selii	E C	EVE	EVEL III (Std OC + forms)		RELINGUISHED BY	, FD BY		b	<u> </u>	_				

X LEVEL II (Standard QC)
LEVEL III (Std QC + forms)
LEVEL IV (Std QC + forms + raw data) +raw data)

+old Excess sample materials.

resertative Key: 1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035 QC PACKAGE (check below) liles@senesusa.com

<u> </u>	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	RELINQUISHED BY & ACABAS PO COLUMNY	STe,24cm M Coming 9/7/13 0900	8/6/6	००६०
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RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

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ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

	ALS	000	0	
	Client: SENES Workorder No: 120		9	_
	Project Manager: JRK Initials: <u>LAS</u>	Date:	9/10/	12
1.	Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2.	Are custody seals on shipping containers intact?	NONE	YES	NO
3.	Are Custody seals on sample containers intact?	NONE) YES	NO
4.	Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
5.	Are the COC and bottle labels complete and legible?		YES	NO
6.	Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	NO
7.	Were airbills / shipping documents present and/or removable?	DROP OFF	(YES)	NO
8.	Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
⊢	Are all aqueous non-preserved samples pH 4-9?	N/A	YES	NO
_	Is there sufficient sample for the requested analyses?		(YES)	NO
_	Were all samples placed in the proper containers for the requested analyses?		YES	NO
_	Are all samples within holding times for the requested analyses?		YES	NO
13	Were all sample containers received intact? (not broken or leaking, etc.)		YES	(NO)
14	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea > green pea	N/A	YES	NO
1:	Amount of sediment: dusting moderateheavy	N/A	YES	NO
16	Were the samples shipped on ice?		YES	(NO)
⊢	Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	RAD ONLY	YES	NO
H	Cooler #:	UNLI		
	Temperature (°C): Amb			. —
	No. of custody seals on cooler:			
	DOT Survey/ Acceptance External µR/hr reading: [3]			-
	Background µR/hr reading:			. —
	Were external µR/hr readings ≤ two times background and within DOT acceptance criteria YES NO / NA (If no. se	e Farm 008)	
_	Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, E			
_	numeronal linoi matton. Trovide belvius metor for the rest one for the quantities as			
Ē	*13) 1209099-7 (East Pit-007) arrived with book goods imately 50% of Volume spilled into	en Zi	pper,	<u> </u>
-	cooler- PM notified - planty of volu		for	1
-	Controllined princy of our	ve_	10 1	
-	mayer			
_				
I	f applicable, was the client contacted? (YES / NO / NA Contact: Dary	Date/T	ime: _e	nit
]	Project Manager Signature / Date:			

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002

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	Sender's Name	Company	2 * Your	3 To Recipient's Name	Company Address We cannot delive Address Use this live for	City .	_

PAI 713 Rev 12 Method Blank Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: GS120910-1MB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Prep Batch: GS120910-1 QCBatchID: GS120910-1-1

0.32

Final Aliquot: 215 g Result Units: pCi/g File Name: 120912d05

Lab Qualifier

Requested

MDC

Library: RA226.LIB

Target I

Ra-226

CASNO

13982-63-3

Date Collected: 10-Sep-12 Date Prepared: 10-Sep-12 Date Analyzed: 02-Oct-12 Run ID: GS120910-1A Count Time: 30 minutes

Nuclide	Result +/- 2 s TPU	MDC

-0.03 +/- 0.17

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

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PAI 713 Rev 12

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: GS120910-1LCS

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Prep Batch: GS120910-1 QCBatchID: GS120910-1-1 Final Aliquot: 215 g Result Units: pCi/g File Name: 121239d10

Library: RA226.LIB

Date Collected: 10-Sep-12 Date Prepared: 10-Sep-12

Run ID: GS120910-1A Count Time: 30 minutes

Date Analyzed: 02-Oct-12

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	449 +/- 53	2	469.5	95.6	85 - 115	P,M3

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

LT - Result is less than Requested MDC, greater than sample specific MDC. Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

P - LCS Recovery within control limits.

L - LCS Recovery below lower control limit. H - LCS Recovery above upper control limit.

M - The requested MDC was not met. M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC. Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

SQ - Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative. R - Nuclide has exceeded 8 halflives

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

ALS Environmental -- FC

Page 1 of 1

PAI 713 Rev 12

Duplicate Sample Results (DER)

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC
Lab ID: 1209099-2DUP

Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Prep Batch: GS120910-1
QCBatchID: GS120910-1-1
Run ID: GS120910-1A

Final Aliquot: 214 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g

File Name: 121617d04

Abbreviations:

TPU - Total Propagated Uncertainty

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

Date Collected: 06-Sep-12 Date Prepared: 10-Sep-12 Date Analyzed: 02-Oct-12

Count Time: 30 minutes
Report Basis: Dry Weight

CASNO	Analyte	Sample)		Duplica	ate		DER	DER
	Allalyte	Result +/- 2 s TPU	MDC	Flags	Result +/- 2 s TPU	MDC	Flags		Lim
13982-63-3	Ra-226	0.56 +/- 0.21	0.29	LT,TI	0.46 +/- 0.17	0.38	LT	0.38	2.13

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

ALS Environmental -- FC

Page 1 of 2

PAI 713 Rev 12

Duplicate Sample Results (DER)

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209099-4DUP Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10

Prep Batch: GS120910-1 QCBatchID: GS120910-1-1 Date Collected: 06-Sep-12 Run ID: GS120910-1A

Final Aliquot: 207 q Prep Basis: Dry Weight Moisture(%): NA

Date Prepared: 10-Sep-12 Date Analyzed: 02-Oct-12

Count Time: 30 minutes Report Basis: Dry Weight

Result Units: pCi/g File Name: 121165d07

CASNO	Analyte	Sample	9		Duplica	ate		DER	DER
	Allalyte	Result +/- 2 s TPU	MDC	Flags	Result +/- 2 s TPU	MDC	Flags		Lim
13982-63-3	Ra-226	0.90 +/- 0.25	0.43	LT	0.82 +/- 0.21	0.33	LT	0.236	2.13

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits. W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits. N - Matrix Spike Recovery outside control limits

DER - Duplicate Error Ratio BDL - Below Detection Limit NR - Not Reported

TPU - Total Propagated Uncertainty

Abbreviations:

SQ - Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative. R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

ALS Environmental -- FC

Page 2 of 2

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209099-1

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 06-Sep-12 Date Prepared: 10-Sep-12

QCBatchID: GS120910-1-1 Count Time: 30 minutes Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1

Run ID: GS120910-1A Report Basis: Dry Weight

Prep Basis: Dry Weight	
Moisture(%): NA	
Result Units: pCi/g	
File Name: 121388d02	

Final Aliquot: 221 g

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.80 +/- 0.21	0.34	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

- TPU Total Propagated Uncertainty MDC - Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

Page 1 of 10

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209099-2

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 06-Sep-12 Date Prepared: 10-Sep-12

Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1

QCBatchID: GS120910-1-1 Run ID: GS120910-1A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 214 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121316d08

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.56 +/- 0.21	0.29	1	LT,TI

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

Page 2 of 10

PAI 713 Rev 12 Sample Duplicate Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC
Lab ID: 1209099-2DUP

Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 06-Sep-12 Prep Batch: GS120910-1 QCBatchID: GS120910-1-1 Run ID: GS120910-1A

Final Aliquot: 214 g
Prep Basis: Dry Weight
Moisture(%): NA

Date Prepared: 10-Sep-12
Date Analyzed: 02-Oct-12

Count Time: 30 minutes Report Basis: Dry Weight

Result Units: pCi/g File Name: 121617d04

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.46 +/- 0.17	0.38	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits.
- $\ensuremath{\mathsf{LT}}$ Result is less than Requested MDC, greater than sample specific MDC.
- M The requested MDC was not met.
- M3 The requested MDC was not met, but thereported activity is greater than the reported MDC.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209099-3

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 06-Sep-12 Date Prepared: 10-Sep-12 Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1 QCBatchID: GS120910-1-1 Run ID: GS120910-1A

Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 186 g Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 120911d05

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.36 +/- 0.16	0.33	1	LT

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209099-4

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Date Collected: 06-Sep-12

Date Prepared: 10-Sep-12

Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1 QCBatchID: GS120910-1-1

Run ID: GS120910-1A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 207 g Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121176d09

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.90 +/- 0.25	0.43	1	LT

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

Page 4 of 10

PAI 713 Rev 12 Sample Duplicate Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC
Lab ID: 1209099-4DUP
Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 06-Sep-12 Prep Batch: GS120910-1 QCBatchID: GS120910-1-1 Run ID: GS120910-1A

Final Aliquot: 207 g
Prep Basis: Dry Weight
Moisture(%): NA

Date Prepared: 10-Sep-12 Date Analyzed: 02-Oct-12 Count Time: 30 minutes
Report Basis: Dry Weight

Result Units: pCi/g File Name: 121165d07

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.82 +/- 0.21	0.33	1	LT

Comments:

Qualifiers/Flags:

 $\,$ U $\,$ - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits. LT - Result is less than Requested MDC,

 $\ensuremath{\mathsf{LT}}$ - Result is less than Requested MDC, greater than sample specific MDC.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209099-1

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Date Printed: Thursday, October 04, 2012 ALS Environmental -- FC

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209099-5

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 06-Sep-12 Date Prepared: 10-Sep-12 Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1 QCBatchID: GS120910-1-1

Run ID: GS120910-1A Count Time: 30 minutes Report Basis: Dry Weight

Final Aliquot: 211 g Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121317d08

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.60 +/- 0.20	0.41	1	LT

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209099-6

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Date Collected: 06-Sep-12

Date Prepared: 10-Sep-12

Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1
QCBatchID: GS120910-1-1

Run ID: GS120910-1A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 189 g
Prep Basis: Dry Weight
Moisture(%): NA

Moisture(%): NA
Result Units: pCi/g
File Name: 121177d09

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.78 +/- 0.27	0.58	1	LT

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209099-7

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Date Collected: 06-Sep-12

Date Prepared: 10-Sep-12

Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1 QCBatchID: GS120910-1-1

Run ID: GS120910-1A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 215 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121238d10

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.79 +/- 0.20	0.28	1	LT

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

Page 7 of 10

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209099-8

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Date Collected: 06-Sep-12

Date Prepared: 10-Sep-12

Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1

QCBatchID: GS120910-1-1

Run ID: GS120910-1A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 204 g
Prep Basis: Dry Weight
Moisture(%): NA

Moisture(%): NA
Result Units: pCi/g
File Name: 121369d01

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.63 +/- 0.21	0.43	1	LT

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

Page 8 of 10

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209099-9

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Date Collected: 06-Sep-12

Date Prepared: 10-Sep-12

Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1
QCBatchID: GS120910-1-1

Run ID: GS120910-1A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 205 g
Prep Basis: Dry Weight
Moisture(%): NA

Result Units: pCi/g File Name: 121389d02

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.64 +/- 0.20	0.38	1	LT

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209099-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

Date Printed: Thursday, October 04, 2012

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209099

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: SO-350180-203-090612-SC Lab ID: 1209099-10

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 06-Sep-12 Date Prepared: 10-Sep-12

Date Analyzed: 02-Oct-12

Prep Batch: GS120910-1 QCBatchID: GS120910-1-1

Run ID: GS120910-1A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 214 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121618d04

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.30 +/- 0.18	0.36	1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209099-1

Date Printed: Thursday, October 04, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

TECHNICAL BULLETIN ADDENDUM

The library used for analysis defines the gamma emission(s) to be used for analysis of each nuclide. If multiple gamma emissions are used for quantification, then a 'NET' quantification emission (or peak) must be defined in the library. This designation provides for the calculation of nuclide activity concentrations and detection limits in the case of non-presence of the nuclide. When the nuclide is not present, or the software is unable to resolve a peak at the library defined 'NET' energy, the software evaluates the 'NET' region of interest ('NET' peak energy +/- 2 keV) by performing a summation of the net counts above the background level. This 'NET' quantification can result in net negative, zero, or positive activity results, and is highly dependent on the spectral distribution in the region of interest of the 'NET' peak. In cases where only the 'NET' peak is found, and the software performs a net quantification, the nuclide result will be flagged with an 'NQ' qualifier on the final reports. This indicates that the nuclide is not detected or supported at any level above the reported MDC. Results are submitted without further qualification.

All nuclides specified in the library of analysis for gamma spectroscopy are evaluated for positive <u>OR</u> tentative identification on the following criteria:

- The individual abundances for the gamma emissions specified for each nuclide are summed to obtain a total nuclide abundance.
- From the total nuclide abundance, a positive identification criterion is set as 75% of this total nuclide abundance.
- For all nuclide peaks that are not net quantified, those peak abundances are summed. The total non-net quantified peak sum is compared to the calculated 75% abundance criterion. If this sum is greater than the 75% criterion, the nuclide is considered to be positively identified at the reported concentration. If the sum is less than the 75% criterion, the nuclide is tentatively identified at the reported concentration. These results will be flagged with a 'TI' qualifier on the final reports to indicate that the 75% abundance criterion was not met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1209350

Client Name: SENES Consultants Limited

Client Project Name: Church Rock Phase II Client Project Number: SENES 350180-203

Client PO Number: Account Number 816126858

Report Due Date: 10/20/2012

Client Sample Number	Lab Sample Number	Test Group	COC Number	Matrix	Date Collected	Time Collected
1-ERM	1209350-1	1		SOIL	18-Sep-12	10:04
2-ERM	1209350-2	1		SOIL	18-Sep-12	10:09
3-ERM	1209350-3	1		SOIL	18-Sep-12	10:15
4-ERM	1209350-4	1		SOIL	18-Sep-12	10:23
5-ERM	1209350-5	1		SOIL	18-Sep-12	10:27
1-GSG	1209350-6	1		SOIL	18-Sep-12	12:06
2-GSG	1209350-7	1		SOIL	18-Sep-12	12:11
3-GSG	1209350-8	1		SOIL	18-Sep-12	12:15
4-GSG	1209350-9	1	TM*M	SOIL	18-Sep-12	12:18
5-GSG	1209350-10	1		SOIL	18-Sep-12	12:28

^{**}Designated QC

Analytical Methods by Test Group



Ra_226/228 SOP642

SW6020

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1209350

Client Name: SENES Consultants Limited

Client Project Name: Church Rock Phase II Client Project Number: SENES 350180-203

Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
1-ERM	1209350-1		SOIL	18-Sep-12	10:04
2-ERM	1209350-2		SOIL	18-Sep-12	10:09
3-ERM	1209350-3		SOIL	18-Sep-12	10:15
4-ERM	1209350-4		SOIL	18-Sep-12	10:23
5-ERM	1209350-5		SOIL	18-Sep-12	10:27
1-GSG	1209350-6		SOIL	18-Sep-12	12:06
2-GSG	1209350-7		SOIL	18-Sep-12	12:11
3-GSG	1209350-8		SOIL	18-Sep-12	12:15
4-GSG	1209350-9		SOIL	18-Sep-12	12:18
5-GSG	1209350-10		SOIL	18-Sep-12	12:28



ALS Labora 225 Commerce Drive, F. TF. (809) 442-1511, PH; (

oratory Group		Chain-of-Custody	todv				
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			-				

(ALA)		SAMP	SAMPLER 24	CAMIL - HANNED	ppan	Timo	_	DATE		2102-81-6	PAGE	\	5	
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CITY / STATE / ZIP	CITY I STATE I ZIP EMGLE WOOD, CD. 80112	CITY / STATE	IN POLL	CITY I STATE I ZICK MOND LEVILL, OT LYBENY	11.07	14831	- W							
PHONE	PHONE 303-524-1406	Æ	PHONE 9	905-764-9380	4.93	3								
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Lab ID	Field ID	Matrix	Sample Date	Sample Time	** Sample Pres.	8 8	125 0	1421-4	1401-N				,,	
0	1-ERM	S	7001 2-8-6	7001	\	-	/×	×	~					
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*Time Zone (Circle):	Time Zone (Circle): EST CST MST PST Matrix: O = oil(S = soil	O = oil (S = soil NS = non-soil solid W = water L = liquid E = extract F = filter	d W=water	L=liquid E=a	kfract F=filts									

Comments:						8	PACK	QC PACKAGE (check below)
	1					<u> </u>	×	LEVEL II (Standard QC)
							7	LEVEL III (Std QC + forms)
3.								LEVEL IV (Std QC + forms + raw data)
						L		
Preservative Key:		2-HN03	3-H2SO4	4-NaOH	5-NaHSO4	7-Other	4	1-HCi 2-HN03 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

) SIGNATURE	PRINTED NAME	DATE	TIME
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ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: $\sum \mathcal{E} \mathcal{N} \mathcal{E} \mathcal{S}$ Workorder No:	120939	50	
Project Manager: Initials:	CDT Date:	9-21	-12
Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
Are custody seals on shipping containers intact?	NONE	YES	(NO)
Are Custody seals on sample containers intact?	NONE) YES	NO
Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
Are the COC and bottle labels complete and legible?		(YES)	NO
Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, containers, matrix, requested analyses, etc.)	no. of	YES	NO
Were airbills / shipping documents present and/or removable?	DROP OFF	(ES)	NO
Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
Is there sufficient sample for the requested analyses?		YES	NO
Were all samples placed in the proper containers for the requested analyses?		YES	NO
2. Are all samples within holding times for the requested analyses?		(YES)	NO
3. Were all sample containers received intact? (not broken or leaking, etc.)		(YES)	NO
4 Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea > green pea	N/A	YES	NO
5. Do any water samples contain sediment? Amount of sediment: dusting moderate heavy	ount N/A	YES	NO
6 Were the samples shipped on ice?		YES	(NO)
7. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2	#4 RAD ONLY	YES	(NO)
Cooler #:	, ONL1		
Temperature (°C): Amb			
No. of custody seals on cooler:			
DOT Survey/ Acceptance External μR/hr reading: 2			
Background μR/hr reading:			
Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? (YES) NO / NA	(Hno see Form 008)		
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION AS		NID #16	
The custody SEAL WAS ripped off And			
An End of the tape.	W2 - 2116C	10	
f applicable, was the client contacted? YES / NO / D Contact:	The contract		
111 / 6 20 1	Date/Tir	ne:	
Project Manager Signature / Date:			
*IR Gun #2: Oakton, SN 29922500201-0066			

Form 201r24.xls (06/04/2012)

*IR Gun #4: Oakton, SN 2372220101-0002

Page 1 of





Metals Case Narrative

SENES Consultants Limited

Church Rock Phase II – SENES 350180-203

Work Order Number: 1209350

- 1. This report consists of 10 soil samples.
- 2. The samples were received intact at ambient temperature by ALS on 9/21/12.
- 3. The samples were prepared and analyzed based on SW-846, 3rd Edition procedures.

For analysis by ICP-MS, the samples were digested following method 3050B and the current revision of SOP 806.

- 4. Analysis by ICP-MS followed method 6020A and the current revision of SOP 827.
- All standards and solutions are NIST traceable and were used within their recommended shelf life.
- 6. The samples were prepared and analyzed within the established hold times.

All in house quality control procedures were followed, as described below.

- 7. General quality control procedures.
 - A preparation (method) blank and laboratory control sample were digested and analyzed with the samples in this digestion batch.
 - The preparation (method) blank associated with this digestion batch was below the reporting limit for the requested analytes.
 - All laboratory control sample criteria were met.
 - All initial and continuing calibration blanks were below the reporting limit for the requested analytes.
 - All initial and continuing calibration verifications were within the acceptance criteria for the requested analytes.



- The interference check samples associated with Method 6020A were analyzed.
- 8. Matrix specific quality control procedures.

Per method requirements, matrix QC was performed for this analysis. Since a sample from this order number was not the selected quality control (QC) sample, matrix specific QC results are not included in this report.

9. All samples were analyzed at a dilution in order to protect the ICP-MS from the high metal content of the samples.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Inorganics Primary Data Reviewer



Inorganic Data Reporting Qualifiers

The following qualifiers are used by the laboratory when reporting results of inorganic analyses.

- Result qualifier -- If the analyte was analyzed for but not detected a "U" is entered.
- QC qualifier -- Specified entries and their meanings are as follows:
 - E The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
 - M Duplicate injection precision was not met.
 - N Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
 - Z Spiked recovery not within control limits. An explanatory note may be included in the narrative.
 - * Duplicate analysis (relative percent difference) not within control limits.
 - S SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1209350

Client Name: SENES Consultants Limited

Client Project Name: Church Rock Phase II Client Project Number: SENES 350180-203

Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
1-ERM	1209350-1		SOIL	18-Sep-12	10:04
2-ERM	1209350-2		SOIL	18-Sep-12	10:09
3-ERM	1209350-3		SOIL	18-Sep-12	10:15
4-ERM	1209350-4		SOIL	18-Sep-12	10:23
5-ERM	1209350-5	_	SOIL	18-Sep-12	10:27
1-GSG	1209350-6		SOIL	18-Sep-12	12:06
2-GSG	1209350-7	_	SOIL	18-Sep-12	12:11
3-GSG	1209350-8		SOIL	18-Sep-12	12:15
4-GSG	1209350-9		SOIL	18-Sep-12	12:18
5-GSG	1209350-10	_	SOIL	18-Sep-12	12:28

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Chain-of-Custody

ALS Laboratory Group
225 Commerce Drive, For Collins, Colorado 80524
TE: (800) 443-1511 PH: (870) 480-1511 PX: (870) 480-1511

	TF: (800) 443-1511 PH: (870) 490-1511 FX: (870) 490-1522	J-1522							ŭ.	Form 202r8				
ALS)		SAN	SAMPLER 24	2AML- Harald	mile Sim	3		DATE	-81-6	18-2012	PAGE	\	5	
PROJECT NAME	Church Rock		SITE ID	Phase 4	7		TURNAROUND	anno	30 day	ay	DISPOSAL	By Lab or		Return to Client
PROJECT NO. SCILES	SUES 330180-203	EDD FORMAT	RMAT											
		PURCHASE ORDER	DRDER Arry	7 14. 81	NB. 816/26858	A								
SOMPANY NAME	SENES	BILL TO COM	HPANY SERVE	BILL TO COMPANY SENCE CONSULTANT, LAY,	Hank,	tat								
END REPORT TO	Darrel Lile	INVOICE ATTN TO		Andrea Petr	Pett									
ADDRESS	ADDRESS BS10S. Valley Hurs, 3014	ADE	ADDRESS /2/	12/ Granton Dr. Unit 12	1 Dr. Un	40								
ITY / STATE / ZIP	ITVISTATEIZIP STAGE WOOD, CO. 80112	CITY / STAT	EIZIP POLL	CITY I STATE 1 ZIP Rehmond Hill, OT 6483WF	:11,07 68	1 KB31	···							
PHONE	303-524-1406		PHONE 9	905-764-9380	4-938	-								
FAX			FAX											
E-MAIL	41:165 @ SOUE SUST. COM		-MAIL A DE	E-MAIL apost a SENCES. CA	B. CA									
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£	4-ERM	ς	8-18-A 1023	1023			×	×						
(S)	S-GRM	3	4-18-12 1027	1027	/		X	×						
(3)	1-656	S	2-18-12	1206	_ /		$X \mid X$	×		-				
0	259-8	S	1121 7-81-6	1121	/		×	×						
(8)	3-656	5	21-81-6	1215			×	×						
6	252-3	S	21-81-6	8121	_		×	×						
(0)	9 59-5	S	8-18-12	1228	_		×	Χ.						
ne Zone (Circle):	EST CST MST PST Matrix: 0 = oil S = so	O = oil (S = soil NS = non-soil soild W = water L = liquid E = extract F = filter	solid W=water	Leilquid Ese.	xtract F = filter	'								
r metals or ank	r metals or anions, please detail analytes below.	\					s / /	SIGNATURE	Č	PRIN	PRINTED NAME	DATE	E F	TIME
mments:		QC PACK	QC PACKAGE (check below)	\$	RELINQUISHED BY	SHED BY	M	J. S.E.	4	Harold	1 Sim	21/4/6	-	1050
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QC PACKAGE (check below) 5 of 11

1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035 servative Key:

	/	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	/	- will car	Hardd Sim 9/19/12 1050	21/6/6	1050
кесегуер ву		C Jromble	C Tr 12 18	0511 11-16-6	11.30
RELINQUISHED BY					
RECEIVED BY					
RELINQUISHED BY					
RECEIVED BY					

A

ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: SENES Workorder No: 12 C	939	5.0	
Project Manager: TK Initials: CDT	Date:	9-21	-12
Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2 Are custody seals on shipping containers intact?	NONE	YES	(NO)
3 Are Custody seals on sample containers intact?	NONE	YES	NO
Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
5. Are the COC and bottle labels complete and legible?		YES	NO
6 ls the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES)	NO
Were airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
Arc all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A)	YES	NO
10 Is there sufficient sample for the requested analyses?		YES	NO
Were all samples placed in the proper containers for the requested analyses?		YES	NO
12 Are all samples within holding times for the requested analyses?		YES	NO
13 Were all sample containers received intact? (not broken or leaking, etc.)		YES	NO
14 Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea > green pea	(N/A)	YES	NO
Do any water samples contain sediment? Amount of sediment:dusting moderateheavy	(N/A)	YES	NO
16. Were the samples shipped on ice?		YES	(NO)
Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	RAD ONLY	YES	NO
Cooler #:			
Temperature (°C): Awb			
No. of custody seals on cooler:			
DOT Survey/ Acceptance External µR/hr reading:			
Information Background μR/hr reading:			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? (YES)/ NO / NA (If no. see	Form 008.)		
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EX	CEPT#1 A	ND #16.	
The costody seal was ripped off And just An End of the Tape.	Sluc	k lo	

If applicable, was the client contacted? YES / NO / Contact:	_ Date/Tii	ne:	
Project Manager Signature / Date: 9-21-11	_		
MID C. W. 42. O. Har. ON 200725 07224 2006			

Form 201r24.xls (06/04/2012)

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002



Total THORIUM

Method SW6020 Revision A

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: SENES Consultants Limited

Client Project ID: Church Rock Phase II SENES 350180-203

 Work Order Number:
 1209350
 Final Volume:
 100 ml

 Reporting Basis:
 Dry Weight
 Matrix:
 SOIL

 Prep Method:
 SW3050B
 Result Units:
 UG/KG

Analyst: Ross Miller

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
1-ERM	1209350-1	09/18/2012	09/25/2012	09/27/2012	9.0	50	7400	110		1.004 g
2-ERM	1209350-2	09/18/2012	09/25/2012	09/27/2012	5.8	50	5800	100		1.038 g
3-ERM	1209350-3	09/18/2012	09/25/2012	09/27/2012	5.5	50	5400	100		1.022 g
4-ERM	1209350-4	09/18/2012	09/25/2012	09/27/2012	10.4	50	6800	110		1.022 g
5-ERM	1209350-5	09/18/2012	09/25/2012	09/27/2012	11.0	50	8200	110		1.002 g
1-GSG	1209350-6	09/18/2012	09/25/2012	09/27/2012	3.4	50	950	100		1.026 g
2-GSG	1209350-7	09/18/2012	09/25/2012	09/27/2012	4.6	50	800	100		1.012 g
3-GSG	1209350-8	09/18/2012	09/25/2012	09/27/2012	4.1	50	870	100		1.014 g
4-GSG	1209350-9	09/18/2012	09/25/2012	09/27/2012	4.1	50	840	100		1.019 g
5-GSG	1209350-10	09/18/2012	09/25/2012	09/27/2012	4.7	50	720	100		1.009 g

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: im1209350-1

Date Printed: Thursday, October 04, 2012 ALS Environmental -- FC

LIMS Version: 6.615

Page 1 of 2

Total URANIUM

Method SW6020 Revision A

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: SENES Consultants Limited

Client Project ID: Church Rock Phase II SENES 350180-203

 Work Order Number:
 1209350
 Final Volume:
 100 ml

 Reporting Basis:
 Dry Weight
 Matrix:
 SOIL

 Prep Method:
 SW3050B
 Result Units:
 UG/KG

Analyst: Ross Miller

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
1-ERM	1209350-1	09/18/2012	09/25/2012	09/27/2012	9.0	50	1500	55		1.004 g
2-ERM	1209350-2	09/18/2012	09/25/2012	09/27/2012	5.8	50	690	51		1.038 g
3-ERM	1209350-3	09/18/2012	09/25/2012	09/27/2012	5.5	50	650	52		1.022 g
4-ERM	1209350-4	09/18/2012	09/25/2012	09/27/2012	10.4	50	1000	55		1.022 g
5-ERM	1209350-5	09/18/2012	09/25/2012	09/27/2012	11.0	50	1100	56		1.002 g
1-GSG	1209350-6	09/18/2012	09/25/2012	09/27/2012	3.4	50	860	50		1.026 g
2-GSG	1209350-7	09/18/2012	09/25/2012	09/27/2012	4.6	50	920	52		1.012 g
3-GSG	1209350-8	09/18/2012	09/25/2012	09/27/2012	4.1	50	850	51		1.014 g
4-GSG	1209350-9	09/18/2012	09/25/2012	09/27/2012	4.1	50	950	51		1.019 g
5-GSG	1209350-10	09/18/2012	09/25/2012	09/27/2012	4.7	50	690	52		1.009 g

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: im1209350-1

Date Printed: Thursday, October 04, 2012 ALS Environmental -- FC

LIMS Version: 6.615

Page 2 of 2

ICPMS Metals

Method SW6020A Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: IP120925-9MB

Sample Matrix: SOIL % Moisture: N/A Date Collected: N/A

Date Extracted: 25-Sep-12 Date Analyzed: 27-Sep-12 Prep Method: SW3050 Rev B

Prep Batch: IP120925-9 QCBatchID: IP120925-9-3 Run ID: IM120927-11A1

File Name: 030SMPL.

Sample Aliquot: Final Volume: Cleanup: NONE Basis: N/A

Result Units: UG/KG Clean DF:

1 g

100 ml

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-29-1	THORIUM	10	20	20	U	
7440-61-1	URANIUM	10	10	10	U	

Data Package ID: im1209350-1

ICPMS Metals

Method SW6020A Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: IM120925-9LCS

Sample Matrix: SOIL % Moisture: N/A Date Collected: N/A Date Extracted: 09/25/2012

QCBatchID: IP120925-9-3 Run ID: IM120927-11A1 Cleanup: NONE

Prep Batch: IP120925-9

Sample Aliquot: 1 g
Final Volume: 100 ml
Result Units: UG/KG
Clean DF: 1

Date Analyzed: 09/27/2012 Basis: N/A
Prep Method: SW3050B File Name: 031SMPL.

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-29-1	THORIUM	1000	1070	20		107	80 - 120%
7440-61-1	URANIUM	1000	1060	10		106	80 - 120%

Data Package ID: im1209350-1



Gamma Spectroscopy Case Narrative

SENES Consultants Limited

Church Rock Phase II – SENES 350180-203

Work Order Number: 1209350

- The following report consists of analytical results for 10 soil samples received by ALS on 09/21/2012.
- 2. These samples were prepared according to the current revision of SOP 739. The samples were sealed in steel cans on 09/23/2012 and stored for at least 22 days to allow ²²²Rn to approach secular equilibrium with its parent, ²²⁶Ra. The degree of in-growth achieved prior to analysis on 10/15/2012 is at least 98.15%. Conservatively assuming a radon emanation efficiency of approximately 50%, the effective radon progeny in-growth for these samples would be greater than 99.07%.
- 3. The samples were analyzed for the presence of gamma emitting radionuclides according to the current revision of SOP 713. The analyses were completed on 10/15/2012.
- 4. The results for these samples are reported on a "Dry Weight" basis in units of pCi/gram.
- Sample volumes were insufficient to allow preparation of a duplicate. A duplicate analysis of sample 1209350-4 was performed in lieu of a prepared duplicate.
- 6. ALS has observed a reproducible low bias in ²²⁶Ra results (about -30% for the geometry in question) when using a mixed gamma source for the calibration of HPGe detectors for solid samples. This bias is eliminated by calibration using a NIST traceable ²²⁶Ra source in the same geometry and configuration as the samples.
- 7. The library used for calibration and analysis employs multiple peaks for the ²²⁶Ra progeny, ²¹⁴Pb (352 and 295 keV) and ²¹⁴Bi (609 and 1120 keV). Using these peaks avoids the use of the problematic ²²⁶Ra photo-peak at 186 keV, which suffers from poorly resolvable interference from ²³⁵U at the same energy. Final activity results for ²²⁶Ra are calculated, using the uncertainty-weighted mean of the activities for the four photo-peaks, by the Seeker gamma spectroscopy software assuming secular equilibrium.



- 8. There are cases where the sample density is less than the associated calibration standard density. Cases that exceed the limit of +/- 15% of the density of the calibration standard are flagged with a 'G', denoting a significant density difference between the sample and calibration standard. Consequently, the results may be biased high for the flagged results in this work order. If requested, ALS can perform a transmission spike in order to estimate a magnitude of this bias. The results are reported without further qualification.
- 9. No further problems were encountered with either the client samples or the associated quality control samples. All remaining quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Radiochemistry Primary Data Reviewer

Radiochemistry Final Data Reviewer

10/18/12 Date

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1209350

Client Name: SENES Consultants Limited Client Project Name: Church Rock Phase II

Client Project Number: SENES 350180-203

Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
1-ERM	1209350-1		SOIL	18-Sep-12	10:04
2-ERM	1209350-2		SOIL	18-Sep-12	10:09
3-ERM	1209350-3		SOIL	18-Sep-12	10:15
4-ERM	1209350-4		SOIL	18-Sep-12	10:23
5-ERM	1209350-5		SOIL	18-Sep-12	10:27
1-GSG	1209350-6		SOIL	18-Sep-12	12:06
2-GSG	1209350-7		SOIL	18-Sep-12	12:11
3-GSG	1209350-8		SOIL	18-Sep-12	12:15
4-GSG	1209350-9		SOIL	18-Sep-12	12:18
5-GSG	1209350-10		SOIL	18-Sep-12	12:28

Date Printed: Thursday, October 18, 2012

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ALS Laboratory Group
225 Commerce Drive, Fort Colline, Colorado 80624
TF: (800) 443-1511 PH: (870) 440-1512

Chain-of-Custody

WORKORDER 12 0 9.35 0

_	TF: (800) 443-1511 PH: (870) 490-1511 FX: (870) 490-1522	-1522								Form 202r8				
ALS)		SAM	SAMPLER 21	2AML - Harald Sim	Span	lins		DATE	9,	18-2012	PAGE	\	5	
PROJECT NAME	Church Rock	S	SITE ID	Phase 1	7		Ę	TURNAROUND		30 day	DISPOSAL	By Lab	or Retu	Return to Client
PROJECT NO. SEUES	SUES 330180-203	EDD FORMAT	RMAT											
		PURCHASEO	RDER AS	PURCHASE ORDER ALLY NO. 816/26 858	87217	3S					-			
SOMPANY NAME	SENES	BILL TO COM	PANY SEL	BILL TO COMPANY SEALES CONSCI TANK	Hank	Left								
END REPORT TO	Darrel Lile	INVOICE ATTN TO		Andrea Pett	Part									
ADDRESS	ADDRESS \$310 S. Valley Huy, 3014	ADD	ADDRESS /2/	12/ Granton Dr. Unis	1 Dr. L	larta								
ITY / STATE / ZIP	ITY I STATE I ZIP EMPLY WOOD, CO. 80112	CITY / STATE / ZIP	EIZIP POLL	Exemond Hill, 07	11.07	1483N	. <i>y</i> .							
PHONE	303-524-1406	a	PHONE	0856-764-9380	1.93	3								
FAX			FAX											
E-MAIL	diles estesust. com	Ħ	MAIL APE	E-MAIL apost a BNBS. CA	12. CA									
Lab ID	Field ID	Matrix	Sample Date	Sample Time	** Sample Pres.	s: OC	122 6	18481-4	1401-1					
	1-ERM	S	7-18-12 100K	7001	-		y ×	<u> </u>	クメ					
0	2-ERM	4	6001 71816	1009	\		×	×	×					
6	3-824	5	7-18-12	5101 21-81-6	\		×	~	×					
(L)	4-ERM	ς	2-18-12	8-18-2 1023	/		×	×	×					
(S)	S-GRM	S	3-18-12	4-18-12 1027	/		×	×	×					
()	1-656	S	7021 21-81-6	1206	/		×	` `~	×					
0	259-8	S	2-81-6	1121 21-81-6	\		×	~	×					
(&)	3-656	4	21-81-6	1215	`		×	`~	×					
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ne Zone (Circle): I	EST CST MST PST Matrix: 0 = oil (S = so	O = oil (S = soil NS a non-soil soild W = water L = ilquid E = extract F = filter	olid W = water	Leilquid Eseo	xtract F=fit									
r metats or ank	r metals or anions, please detail analytes below.	١					`	SIGNATURE	E.	PRIN	PRINTED NAME	8	DATE	TIME

1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

	SIGNATURE	PRINTED NAME	DATE	
RELINQUISHED BY	Scat	Harold Sim 9/19/12 1050	2/14/12	1050
RECEIVED BY	C Jumble	C Tr 1mble	9-31-12 1130	11.30
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: $SENES$ Workorder No: DEC	935	5.0	_
Project Manager: TK Initials: CDT	Date:	9-21	-12
Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2 Are custody seals on shipping containers intact?	NONE	YES	(NO)
3 Are Custody seals on sample containers intact?	NONE	YES	NO
4 Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
5. Are the COC and bottle labels complete and legible?		(YES)	NO
6 Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES)	NO
Were airbills / shipping documents present and/or removable?	OROP OFF	YES)	NO
Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A)	YES	NO
Is there sufficient sample for the requested analyses?		YES	NO
Were all samples placed in the proper containers for the requested analyses?		YES	NO
12 Are all samples within holding times for the requested analyses?		YES	NO
13 Were all sample containers received intact? (not broken or leaking, etc.)		YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea > green pea	(N/A)	YES	NO
Amount of sediment: dusting moderate heavy	(N/A)	YES	NO
16. Were the samples shipped on ice?	·	YES	(NO)
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	RAD ONLY	YES	(NO)
Cooler #:			
Temperature (°C): Awb			
No. of custody seals on cooler:			
DOT Survey, Acceptance External µR/hr reading:			
Information Background μR/hr reading:			
Were external μR/hr readings ≤ two times background and within DOT acceptance criteria? (YES)/ NO / NA (If no, see F	orm 008.)		
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXC		ND #16.	,
The custody seal was ripped off And just. An End of the tape.			
If applicable, was the client contacted? YES / NO / O Contact: Project Manager Signature / Date: 1	Date/Tir	ne:	
Project Manager Signature / Date: 7-H-(1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-			
Form 201r24.xls (06/04/2012)		D. 1	.c.l

Page 1 of ______ **5 of 21**



PAI 713 Rev 12 **Method Blank Results**

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: GS120922-1MB

Sample Matrix: SOIL

Prep Batch: GS120922-1 Prep SOP: PAI 739 Rev 10 QCBatchID: GS120922-1-1

Run ID: GS120922-1A Count Time: 30 minutes

Final Aliquot: 215 g Result Units: pCi/g File Name: 121748d04

Date Collected: 23-Sep-12 Library: RA226.LIB Date Prepared: 23-Sep-12

Date Analyzed: 15-Oct-12

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.10 +/- 0.17	0.28	1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: GSS1209350-1

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Date Printed: Thursday, October 18, 2012

PAI 713 Rev 12

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Lab ID: GS120922-1LCS

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Prep Batch: GS120922-1 QCBatchID: GS120922-1-1 Final Aliquot: 215 g Result Units: pCi/g File Name: 121006d05

Library: RA226.LIB

Date Collected: 23-Sep-12 Date Prepared: 23-Sep-12 Run ID: GS120922-1A Count Time: 30 minutes

Date Analyzed: 15-Oct-12

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	452 +/- 53	2	469.5	96.2	85 - 115	P,M3

Comments:

Qualifiers/Flags:

 $\ensuremath{\mathsf{U}}\xspace$ - Result is less than the sample specific MDC or less than the associated TPU.

 $\ensuremath{\mathsf{LT}}$ - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

SQ - Spectral quality prevents accurate quantitation.
SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

Data Package ID: GSS1209350-1

Date Printed: Thursday, October 18, 2012

ALS Environmental -- FC

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

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LIMS Version: 6.618

PAI 713 Rev 12

Duplicate Sample Results (DER)

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: 4-ERM Lab ID: 1209350-4DUP Sample Matrix: SOIL

Prep Batch: GS120922-1 Prep SOP: PAI 739 Rev 10 QCBatchID: GS120922-1-1 Date Collected: 18-Sep-12

Prep Basis: Dry Weight Run ID: GS120922-1A Moisture(%): NA Result Units: pCi/g

Abbreviations:

TPU - Total Propagated Uncertainty

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

Final Aliquot: 168 q

File Name: 121455d01

Library: RA226.LIB Date Prepared: 23-Sep-12 Date Analyzed: 15-Oct-12

Count Time: 30 minutes Report Basis: Dry Weight

CASNO	Analyte	Sample)		Duplica	ate		DER	DER
	Analyte	Result +/- 2 s TPU	MDC	Flags	Result +/- 2 s TPU	MDC	Flags		Lim
13982-63-3	Ra-226	1.68 +/- 0.33	0.41	G	2.03 +/- 0.42	0.62	G	0.663	2.13

Comments:

Duplicate Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13
- LT Result is less than Request MDC, greater than sample specific MDC
- M Requested MDC not met.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L LCS Recovery below lower control limit.
- H LCS Recovery above upper control limit.
- P LCS, Matrix Spike Recovery within control limits.
- N Matrix Spike Recovery outside control limits

- SQ Spectral quality prevents accurate quantitation. SI - Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1209350-1

Date Printed: Thursday, October 18, 2012

ALS Environmental -- FC LIMS Version: 6.618

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: 1-ERM Lab ID: 1209350-1

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 18-Sep-12
Date Prepared: 23-Sep-12
Date Analyzed: 15-Oct-12

Prep Batch: GS120922-1 QCBatchID: GS120922-1-1 Run ID: GS120922-1A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 162 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121454d01

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.69 +/- 0.38	0.57	1	G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209350-1

Date Printed: Thursday, October 18, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: 2-ERM Lab ID: 1209350-2

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 18-Sep-12
Date Prepared: 23-Sep-12
Date Analyzed: 15-Oct-12

Prep Batch: GS120922-1

QCBatchID: GS120922-1-1

Run ID: GS120922-1A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 183 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121477d02

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.03 +/- 0.27	0.48	1	

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty

 MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1209350-1

Date Printed: Thursday, October 18, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

Page 2 of 10

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: 3-ERM Lab ID: 1209350-3

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 18-Sep-12 Date Prepared: 23-Sep-12 Date Analyzed: 15-Oct-12

Prep Batch: GS120922-1 QCBatchID: GS120922-1-1 Run ID: GS120922-1A

Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 179 g Prep Basis: Dry Weight Moisture(%): NA

Result Units: pCi/g File Name: 121746d04

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.34 +/- 0.32	0.50	1	G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209350-1

Date Printed: Thursday, October 18, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: 4-ERM Lab ID: 1209350-4

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 18-Sep-12
Date Prepared: 23-Sep-12
Date Analyzed: 15-Oct-12

Prep Batch: GS120922-1 QCBatchID: GS120922-1-1 Run ID: GS120922-1A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 168 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121004d05

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.68 +/- 0.33	0.41	1	G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209350-1

Date Printed: Thursday, October 18, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

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LIMS Version: 6.618

PAI 713 Rev 12 Sample Duplicate Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: 4-ERM

Lab ID: 1209350-4DUP

Library: RA226.LIB

Sample Matrix: SOIL Prep SOP: PAI 739 Rev 10 Date Collected: 18-Sep-12 Prep Batch: GS120922-1 QCBatchID: GS120922-1-1 Run ID: GS120922-1A

Final Aliquot: 168 g
Prep Basis: Dry Weight
Moisture(%): NA

Date Prepared: 23-Sep-12 Date Analyzed: 15-Oct-12 Count Time: 30 minutes Result Units: pCi/g
Report Basis: Dry Weight File Name: 121455d01

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	2.03 +/- 0.42	0.62	1	G

Comments:

Qualifiers/Flags:

- $\,$ U $\,$ Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits. LT - Result is less than Requested MDC,
- $\ensuremath{\mathsf{LT}}$ Result is less than Requested MDC, greater than sample specific MDC.
- M The requested MDC was not met.
- M3 The requested MDC was not met, but thereported activity is greater than the reported MDC.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209350-1

Date Printed: Thursday, October 18, 2012

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: 5-ERM Lab ID: 1209350-5

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 18-Sep-12 Date Prepared: 23-Sep-12

Date Analyzed: 15-Oct-12

Prep Batch: GS120922-1

QCBatchID: GS120922-1-1

Run ID: GS120922-1A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 156 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121478d02

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.01 +/- 0.30	0.61	1	G

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209350-1

Date Printed: Thursday, October 18, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: 1-GSG Lab ID: 1209350-6

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 18-Sep-12
Date Prepared: 23-Sep-12
Date Analyzed: 15-Oct-12

Prep Batch: GS120922-1

QCBatchID: GS120922-1-1

Run ID: GS120922-1A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 213 g
Prep Basis: Dry Weight
Moisture(%): NA

Result Units: pCi/g
File Name: 121747d04

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.55 +/- 0.24	0.43	1	LT,TI

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209350-1

Date Printed: Thursday, October 18, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

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PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: 2-GSG Lab ID: 1209350-7

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10

Date Collected: 18-Sep-12 Date Prepared: 23-Sep-12 Date Analyzed: 15-Oct-12

Prep Batch: GS120922-1 QCBatchID: GS120922-1-1 Run ID: GS120922-1A

Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 187 g Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121005d05

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.76 +/- 0.21	0.33	1	LT

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209350-1

Date Printed: Thursday, October 18, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: 3-GSG Lab ID: 1209350-8

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10 Date Collected: 18-Sep-12 Date Prepared: 23-Sep-12

Date Analyzed: 15-Oct-12

Prep Batch: GS120922-1 QCBatchID: GS120922-1-1

Run ID: GS120922-1A Count Time: 30 minutes Report Basis: Dry Weight

Final Aliquot: 193 g Prep Basis: Dry Weight Moisture(%): NA

Result Units: pCi/g File Name: 121248d09

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.61 +/- 0.24	0.52	1	LT

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209350-1

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

Date Printed: Thursday, October 18, 2012

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: 4-GSG Lab ID: 1209350-9

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 18-Sep-12
Date Prepared: 23-Sep-12
Date Analyzed: 15-Oct-12

Prep Batch: GS120922-1 QCBatchID: GS120922-1-1 Run ID: GS120922-1A

Count Time: 30 minutes
Report Basis: Dry Weight

Final Aliquot: 198 g
Prep Basis: Dry Weight
Moisture(%): NA

Result Units: pCi/g File Name: 121456d01

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.69 +/- 0.22	0.46	1	LT

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209350-1

Date Printed: Thursday, October 18, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC Page 9 of 10

LIMS Version: 6.618

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1209350

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203

Field ID: 5-GSG Lab ID: 1209350-10

Library: RA226.LIB

Sample Matrix: SOIL

Prep SOP: PAI 739 Rev 10
Date Collected: 18-Sep-12
Date Prepared: 23-Sep-12
Date Analyzed: 15-Oct-12

Prep Batch: GS120922-1 QCBatchID: GS120922-1-1

Run ID: GS120922-1A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 186 g
Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121479d02

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.54 +/- 0.21	0.40	1	LT

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviation

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1209350-1

Date Printed: Thursday, October 18, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

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TECHNICAL BULLETIN ADDENDUM

The library used for analysis defines the gamma emission(s) to be used for analysis of each nuclide. If multiple gamma emissions are used for quantification, then a 'NET' quantification emission (or peak) must be defined in the library. This designation provides for the calculation of nuclide activity concentrations and detection limits in the case of non-presence of the nuclide. When the nuclide is not present, or the software is unable to resolve a peak at the library defined 'NET' energy, the software evaluates the 'NET' region of interest ('NET' peak energy +/- 2 keV) by performing a summation of the net counts above the background level. This 'NET' quantification can result in net negative, zero, or positive activity results, and is highly dependent on the spectral distribution in the region of interest of the 'NET' peak. In cases where only the 'NET' peak is found, and the software performs a net quantification, the nuclide result will be flagged with an 'NQ' qualifier on the final reports. This indicates that the nuclide is not detected or supported at any level above the reported MDC. Results are submitted without further qualification.

All nuclides specified in the library of analysis for gamma spectroscopy are evaluated for positive <u>OR</u> tentative identification on the following criteria:

- The individual abundances for the gamma emissions specified for each nuclide are summed to obtain a total nuclide abundance.
- From the total nuclide abundance, a positive identification criterion is set as 75% of this total nuclide abundance.
- For all nuclide peaks that are not net quantified, those peak abundances are summed. The total non-net quantified peak sum is compared to the calculated 75% abundance criterion. If this sum is greater than the 75% criterion, the nuclide is considered to be positively identified at the reported concentration. If the sum is less than the 75% criterion, the nuclide is tentatively identified at the reported concentration. These results will be flagged with a 'TI' qualifier on the final reports to indicate that the 75% abundance criterion was not met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1210098

Client Name: SENES Consultants Limited Client Project Name: Church Rock Phase II Client Project Number: SENES 350180-203 (200) Client PO Number: Account Number 816126858

Report Due Date: 10/20/2012

Client Sample Number	Lab Sample Number	Test Group	COC Number	Matrix	Date Collected	Time Collected
001-GSG-1inch	1210098-1	4		SOLID	05-Oct-12	11:15
002-GSG-RB	1210098-2	4		SOLID	05-Oct-12	11:22
003-GSG-RB	1210098-3	4		SOLID	05-Oct-12	11:25

^{**}Designated QC

Analytical Methods by Test Group

Test Group: 4

Ra_226/228

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1210098

Client Name: SENES Consultants Limited
Client Project Name: Church Rock Phase II
Client Project Number: SENES 350180-203 (200)
Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
001-GSG-1inch	1210098-1		SOLID	05-Oct-12	11:15
002-GSG-RB	1210098-2		SOLID	05-Oct-12	11:22
003-GSG-RB	1210098-3		SOLID	05-Oct-12	11:25



ALS Laboratory Group

225 Commerce Drive, Fort Collins, Colorado 80524 TF: (800) 443-1611 PH: (970) 490-1611 FX: (970) 490-1622

Chain-of-Custody

1210098

DISPOSAL By Lab or Return to Client PAGE Form 202r8 ASAP see notes DATE TURNAROUND Ra-226 × × မွ = = = Pres. Sample F INVOICE ATTN TO Andrea Pegg
ADDRESS 121 Granton Dr. Unit #12
CITY / STATE / ZIP Richmond Hill, ON LAB 3N4 SITE ID Gallup Sand and Gravel (GSG) Ψ-BILL TO COMPANY SENES Consultants Limited PURCHASE ORDER Account Number 816126868 11:15:00 11:22:00 Sample Time 11:25:00 E-MAIL apegg@senes.ca PHONE (905) 764-9380 FAX (905) 764-9386 SAMPLER Darrell Lifes 10/5/2012 10/5/2012 10/5/2012 Sample Date EDD FORMAT Matrix Soil Soil ANY NAME SENES

EPORT TO Darrell Liles

ADDRESS 8310 S. Valley Hwy., Suite 3014

STATE / ZIP Englewood, CO 80112

PHONE (303) 521-1406 or (303)717-3257 PROJECT NAME CHUICH ROCK Phase II
PROJECT No. SENES 350180-203 (200) Field ID diiles@senesusa.com 001-GSG-1inch 002-GSG-RB 003-GSG-RB COMPANY NAME
SEND REPORT TO
ADDRESS
CITY / STATE / ZIP E-MAIL LabiD <u> 300</u>6

Time Zone (Circle); EST CST MST PST Matrix O≈oil S=soil NS=non-soil soild W≈water L=liquid E=extract F=filter

For metals or anions, please detail analytes below.

Comments:	OC PACE	QC PACKAGE (check below)	
These are gravel samples (borrow material) taken from Gallup Sand X LEVEL II (Standard CC)	×	LEVEL II (Standard QC)	
and Gravel. The first sample (001) is 1 inch. The second and third samples (002, 003) are road base. Client wants a quick Ra-226		LEVEL III (Std QC + forms)	
gamma spec (do not hold for 21 days for ingrowth).		LEVEL IV (Std QC + forms + raw data)	

Preservative Key: 1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

		SIGNATURE	PRINTED NAME	DATE	TIME	
	RELINQUISHED BY (4)	mell Lille	Darrell Liles	10/5/2012	4:30 PM	
	RECEIVED BY	Jangh	4 (Lauren Schmitz 10/8/12	21/8/01	5101	
	RELINQUISHED BY			1		_
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ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

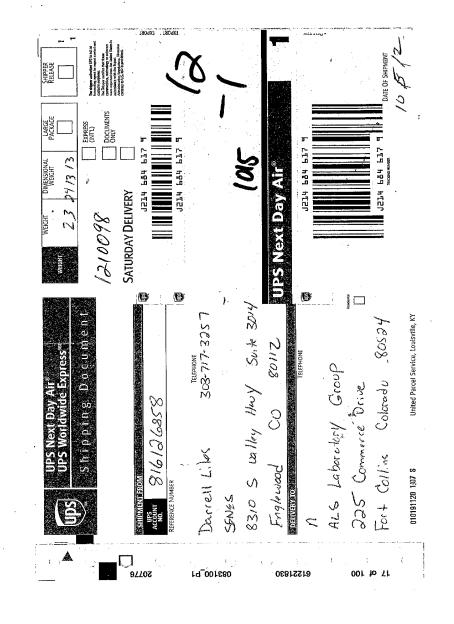
	Client:	Senes		Worko	rder No:	121	0098	у	
Project Ma	nager:	JRK			Initials:	LAS	Date:	10/8/1	2
 Does this proje 	ct require any speci	ial handling in a	ddition to star	ndard ALS proc	edures?			YES	(NO)
2. Are custody s	eals on shipping	containers inta	ct?				NONE	(YES)	NO
3. Are Custody s	seals on sample c	ontainers intac	et?				NONE	YES	NO
	C (Chain-of-Custo			sentative docu	ments?			YES	NO
	and bottle labels							YES	NO
	agreement with s atrix, requested a		ed? (IDs, dat	tes, times, no. o	f samples	, no. of		YES	NO
 Were airbills. 	shipping docum	ents present ar	ıd/or remova	ıble?			DROP OFF	(YES)	NO
8. Are all aqueous	samples requiring	preservation pr	eserved correc	tly? (excluding	volatiles)		(N/A)	YES	NO
 Are all aqueor 	us non-preserved	samples pH 4-	.9?				(N/A)	YES	NO
	ient sample for th							(YES)	NO
11. Were all samp	oles placed in the	proper contain	ners for the r	equested analy	yses?			YES	NO
12. Are all sample	es within holding	times for the 1	equested and	alyses?				(YES)	NO
13. Were all samp	ole containers rec	eived intact?	not broken o	or leaking, etc.)			YES	NO
headspace free		bble:<		K/MEE, Rx Cl > green)	(N/A)	YES	NO
1	samples contain s diment: dus		noderate	heavy	An	ount	(N/A)	YES	NO
16. Were the sam	ples shipped on ic	e?			Nac			YES	(NO)
17. Were cooler to	emperatures meas	ured at 0.1-6.0	O°C?	IR gun used*:	#2	#4	(RAD)	YES	(NO)
		Cooler#:	I				I CHAPPE I		
	Tempera	iture (°C): 🚮	1B						
N	o. of custody seals	on cooler:	1						
DOT Survey/ Acceptance Information	External μR/h Background μR/h	r reading:	2						
Were external μR/h	ır readings ≤ two times l	·	hin DOT accepta	nce criterial VES	NO/NA	(If no see	Form (IOS.)		
	nation: PROVIDE							ND #16	
					(0201101111	DO 12, 221	OCK 1 #11L	7D #10.	

21.7									
		7770				-			
If applicable, was the	alient contrated? VI	ZE /NO KED C					F. 1771	***************************************	
		11	// c	, .			_ Date/Tir	ne:	
Project Manager	Signature / Date:	4111 d		10-8	* (L		-		
		/ <i> (</i> * R Gun	#2: Oakton St	V 29922500201-0	066				

Form 201r24.xls (06/04/2012)

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002

Page 1 of





Gamma Spectroscopy Case Narrative

SENES Consultants Limited

Church Rock Phase II - SENES 350180-203 (200)

Work Order Number: 1210098

- The following report consists of analytical results for three solid samples received by ALS on 10/08/2012.
- 2. These samples were prepared according to the current revision of SOP 739. The samples were sealed in steel cans on 10/09/2012 and stored for at least 21 days to allow ²²²Rn to approach secular equilibrium with its parent, ²²⁶Ra. The degree of in-growth achieved prior to analysis on 10/30/2012 is at least 97.8%. Conservatively assuming a radon emanation efficiency of approximately 50%, the effective radon progeny in-growth for these samples would be greater than 98.9%.
- 3. The samples were analyzed for the presence of gamma emitting radionuclides according to the current revision of SOP 713. The analyses were completed on 10/30/2012.
- 4. The results for these samples are reported on a "Dry Weight" basis in units of pCi/gram.
- Sample volumes were insufficient to allow preparation of a duplicate. A duplicate analysis of sample 1210098-1 was performed in lieu of a prepared duplicate.
- 6. ALS has observed a reproducible low bias in ²²⁶Ra results (about -30% for the geometry in question) when using a mixed gamma source for the calibration of HPGe detectors for solid samples. This bias is eliminated by calibration using a NIST traceable ²²⁶Ra source in the same geometry and configuration as the samples
- 7. The library used for calibration and analysis employs multiple peaks for the ²²⁶Ra progeny, ²¹⁴Pb (352 and 295 keV) and ²¹⁴Bi (609 and 1120 keV). Using these peaks avoids the use of the problematic ²²⁶Ra photo-peak at 186 keV, which suffers from poorly resolvable interference from ²³⁵U at the same energy. Final activity results for ²²⁶Ra are calculated, using the uncertainty-weighted mean of the activities for the four photo-peaks, by the Seeker gamma spectroscopy software assuming secular equilibrium.



8. No problems were encountered with either the client samples or the associated quality control samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Linda Arend

Radiochemistry Primary Data Reviewer

Radiochemistry Final Data Reviewer

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1210098

Client Name: SENES Consultants Limited
Client Project Name: Church Rock Phase II
Client Project Number: SENES 350180-203 (200)
Client PO Number: Account Number 816126858

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
001-GSG-1inch	1210098-1		SOLID	05-Oct-12	11:15
002-GSG-RB	1210098-2		SOLID	05-Oct-12	11:22
003-GSG-RB	1210098-3		SOLID	05-Oct-12	11:25

3 of 13

Date Printed: Friday, November 02, 2012

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100	
714	

ALS Laboratory Group 225 Commerce Drive. Fort Collins. Colorado. 80524 TE, (800). 443-1511. PH. (870), 480-1517. PX. (870), 480-1522.

Chain-of-Custody

WORKORDER | 1210098

	225 Commerce Drive. Fort Collins, Colorado 80524 TF. (800) 443-1511 PH (970) 490-1511 FX. (970) 490-1522	4 10-1522									Fort	Form 202r8	#	17/0070	7	5	0	
		SAMP	SAMPLER Darrell Liles	iles					DATE				PAGE	-		5	-	—т
PROJECT NAME	PROJECT NAME Church Rock Phase II	SIT	SITE ID Gallup S	Gallup Sand and Gravel (GSG)	(080)		-	TURNAROUND	O.N.D.	AS/	ASAP see notes	otes	DISPOSAL	. By Lab	٥	Return	Return to Client	<u> </u>
PROJECT No.	PROJECT No. SENES 350180-203 (200)	EDD FORMAT	МАТ															
		PURCHASE OR	DER Account	PURCHASE ORDER Account Number 816126858	858													
COMPANY NAME	SENES	BILL TO COMP.	ANY SENES	BILL TO COMPANY SENES Consultants Limited	ited													
SEND REPORT TO	Darrell Liles	INVOICE ATTN	INVOICE ATTN TO Andrea Pegg	Pegg														
ADDRESS	8310 S. Valley Hwy., Suite 3014	ADDR	ESS 121 Gran	ADDRESS 121 Granton Dr., Unit #12	2													
CITY/STATE/ZIP	Englewood, CO 80112	CITY / STATE	ZIP Richmo	CITY / STATE / ZIP Richmond Hill, ON L4B 3N4	3N4	ŀ		_										
PHONE	PHONE (303) 521-1406 or (303)717-3257	Ŧ	PHONE (905) 764-9380	0826-1														
FAX			FAX (905) 764-9386	1-9386			922											
E-MAIL		F-2	E-MAIL				.eЯ										\dashv	_
LabiD	Field ID	Matrix	Sample Date	Sample Time	# Sample Pres.													
(3)	001-GSG-1inch	Soil	10/5/2012	11:15:00	-		=											T
4	002-GSG-RB	Soil	10/5/2012	11:22:00	-		× =											- 1
(E)	003-GSG-RB	Soil	10/5/2012	11:25:00	-		× =											
)																		-
	The state of the s																	
										-								
"Time Zone (Cimle)	EST OST MAT PST Matrix O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter	los lios-non ≈ SN lio	id W = water	L = liquid E = e)	dract F = f	ite												

Time Zone (Circle) EST CST MST PST Matrix O = oil S = soil NS = non-soil solid W = water For metals or anions, please detail analytes below.

LEVEL III (Std QC + forms)
LEVEL IV (Std QC + forms
+ raw data) QC PACKAGE (check below)
X LEVEL II (Standard QC) 1-HC| 2-HNO3 3-H2SO4 4-NaCH 5-NaHSO4 7-Cither 6-4 degrees C 9-5035 Comments:

These are gravel samples (borrow material) taken from Gallup Sand and Gravel. The first sample (D01) is 1 inch. The second and third samples(D02, D03) are road base. Client wants a quick Ra-226 gamma spec (do not hold for 21 days for ingrowth). Dreservative Key:

TIME 4:30 PM 1015 Darrell Lifes 1982012 SIGNATURE RELINQUISHED BY COLAND RELINQUISHED BY
RECEIVED BY RECEIVED BY RECEIVED BY RELINQUISHED BY



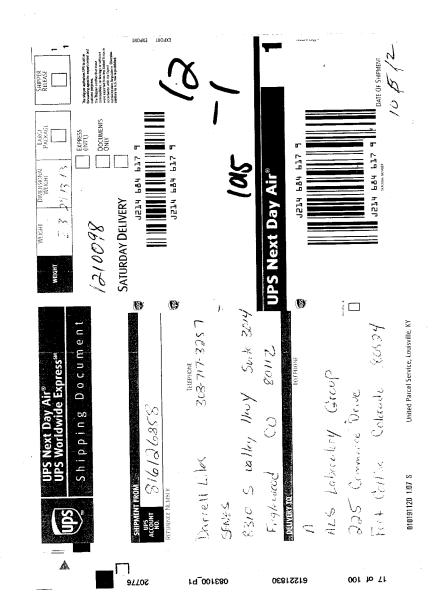
ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Senes Workorder No: 12/	0098	,	
Project Manager: JRK Initials: LAS	Date:	10/8/1	2
Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2. Are custody seals on shipping containers intact?	NONE	(YES)	NO
3 Are Custody seals on sample containers intact?	NONE	YES	NO
Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
s Are the COC and bottle labels complete and legible?		(YES)	NO
6 Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	NO
7 Were airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
9 Are all aqueous non-preserved samples pH 4-9?	N/A)	YES	NO
10 Is there sufficient sample for the requested analyses?		(YES)	NO
Were all samples placed in the proper containers for the requested analyses?		YES	NO
12 Are all samples within holding times for the requested analyses?		(YES)	NO
13 Were all sample containers received intact? (not broken or leaking, etc.)		YES	NO
14. Arc all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea > green pea	N/A)	YES	NO
15. Do any water samples contain sediment? Amount of sediment: dusting moderate heavy	N/A	YES	NO
16. Were the samples shipped on ice?	•	YES	(NO)
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	RAD	YES	(NO)
Cooler #: Temperature (°C): No. of custody seals on cooler: DOT Survey/ Acceptance External μR/hr reading: 12 Background μR/hr reading: 1 Were external μR/hr readings ≤ two times background and within DOT acceptance criterial YES NO / NA (If no. se Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE. E			
If applicable, was the client contacted? YES / NO (N) Contact: Project Manager Signature / Date:	Date/Ti	ime:	

Form 201r24.xls (06/04/2012)

*IR Gun #2: Oakton, SN 29922500201-0066 *IR Gun #4: Oakton, SN 2372220101-0002

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PAI 713 Rev 12 Method Blank Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: GS121011-2MB

Sample Matrix: SOLID

Prep SOP: PAI 739 Rev 10

Prep Batch: GS121011-2 QCBatchID: GS121011-2-1 Run ID: GS121011-2A Final Aliquot: 215 g Result Units: pCi/g File Name: 121827d04

Date Collected: 09-Oct-12 Library: RA226.LIB

Date Prepared: 09-Oct-12 Date Analyzed: 30-Oct-12

Count Time: 30 minutes

	CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
1	13982-63-3	Ra-226	0.09 +/- 0.22	0.38	1	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Data Package ID: GSS1210098-1

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Date Printed: Friday, November 02, 2012

PAI 713 Rev 12

Laboratory Control Sample(s)

Lab Name: ALS Environmental -- FC

Work Order Number: 1210098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Lab ID: GS121011-2LCS

Sample Matrix: SOLID

Prep SOP: PAI 739 Rev 10

Prep Batch: GS121011-2 QCBatchID: GS121011-2-1 Final Aliquot: 215 g Result Units: pCi/g File Name: 121330d07

Library: RA226.LIB

Date Collected: 09-Oct-12 Date Prepared: 09-Oct-12 Run ID: GS121011-2A Count Time: 30 minutes

Date Analyzed: 30-Oct-12

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	452 +/- 53	2	469.5	96.4	85 - 115	P,M3

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

P - LCS Recovery within control limits.

L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

SQ - Spectral quality prevents accurate quantitation.

TI - Nuclide identification is tentative.

R - Nuclide has exceeded 8 halflives.

SI - Nuclide identification and/or quantitation is tentative.

Data Package ID: GSS1210098-1

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PAI 713 Rev 12

Duplicate Sample Results (DER)

Lab Name: ALS Environmental -- FC

Work Order Number: 1210098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: 001-GSG-1inch Lab ID: 1210098-1DUP Library: RA226.LIB

Sample Matrix: SOLID Prep SOP: PAI 739 Rev 10 Date Collected: 05-Oct-12

Prep Batch: GS121011-2 QCBatchID: GS121011-2-1 Run ID: GS121011-2A

Final Aliquot: 234 g Prep Basis: Dry Weight Moisture(%): NA

Date Prepared: 09-Oct-12 Date Analyzed: 30-Oct-12

Count Time: 30 minutes Report Basis: Dry Weight Result Units: pCi/g File Name: 121140d05

Abbreviations:

TPU - Total Propagated Uncertainty

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

CASNO	Analyte	Sample)		Duplica	ate		DER	DER
	Allalyte	Result +/- 2 s TPU	MDC	Flags	Result +/- 2 s TPU	MDC	Flags		Lim
13982-63-3	Ra-226	0.56 +/- 0.18	0.28	LT	0.76 +/- 0.18	0.25	LT	0.771	2.13

Comments:

Duplicate Qualifiers/Flags:

- U Result is less than the sample specific MDC.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13
- LT Result is less than Request MDC, greater than sample specific MDC
- M Requested MDC not met.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L LCS Recovery below lower control limit.
- H LCS Recovery above upper control limit. P - LCS, Matrix Spike Recovery within control limits.
- N Matrix Spike Recovery outside control limits

- SQ Spectral quality prevents accurate quantitation.
- TI Nuclide identification is tentative.
- G Sample density differs by more than 15% of LCS density.

Data Package ID: GSS1210098-1

SI - Nuclide identification and/or quantitation is tentative.

R - Nuclide has exceeded 8 halflives.

Page 1 of 1

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: 001-GSG-1inch Lab ID: 1210098-1

Library: RA226.LIB

Sample Matrix: SOLID

Prep SOP: PAI 739 Rev 10 Date Collected: 05-Oct-12 Date Prepared: 09-Oct-12

Count Time: 30 minutes Date Analyzed: 30-Oct-12 Report Basis: Dry Weight

Prep Batch: GS121011-2 Final Aliquot: 234 g QCBatchID: GS121011-2-1 Prep Basis: Dry Weight Run ID: GS121011-2A

Moisture(%): NA Result Units: pCi/g File Name: 121826d04

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.56 +/- 0.18	0.28	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

- TPU Total Propagated Uncertainty MDC - Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1210098-1

Date Printed: Friday, November 02, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

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Gamma Spectroscopy Results

PAI 713 Rev 12 Sample Duplicate Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: 001-GSG-1inch

Lab ID: 1210098-1DUP

Library: RA226.LIB

Sample Matrix: SOLID Prep SOP: PAI 739 Rev 10 Date Collected: 05-Oct-12 Prep Batch: GS121011-2 QCBatchID: GS121011-2-1 Run ID: GS121011-2A

Final Aliquot: 234 g
Prep Basis: Dry Weight
Moisture(%): NA
Result Units: pCi/g

Date Prepared: 09-Oct-12
Date Analyzed: 30-Oct-12

Count Time: 30 minutes
Report Basis: Dry Weight

File Name: 121140d05

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.76 +/- 0.18	0.25	1	LT

Comments:

Qualifiers/Flags:

- $\,$ U $\,$ Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 Chemical Yield outside default limits. LT - Result is less than Requested MDC,
- $\ensuremath{\mathsf{LT}}$ Result is less than Requested MDC, greater than sample specific MDC.
- M The requested MDC was not met.
- M3 The requested MDC was not met, but thereported activity is greater than the reported MDC.
- W DER is greater than Warning Limit of 1.42
- D DER is greater than Control Limit of 2.13

Abbreviations

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1210098-1

Date Printed: Friday, November 02, 2012

SQ - Spectral quality prevents accurate quantitation.

SI - Nuclide identification and/or quantitation is tentative.

TI - Nuclide identification is tentative

R - Nuclide has exceeded 8 halflives.

G - Sample density differs by more than 15% of LCS density.

Gamma Spectroscopy Results

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: 002-GSG-RB Lab ID: 1210098-2

Library: RA226.LIB

Sample Matrix: SOLID

Prep SOP: PAI 739 Rev 10 Date Collected: 05-Oct-12

Date Prepared: 09-Oct-12 Date Analyzed: 30-Oct-12 Prep Batch: GS121011-2 QCBatchID: GS121011-2-1

Run ID: GS121011-2A Count Time: 30 minutes Report Basis: Dry Weight

Final Aliquot: 247 g Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121139d05

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	1.00 +/- 0.20	0.25	1	LT

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC or less than the associated TPU.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

LT - Result is less than Requested MDC, greater than sample specific MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

TPU - Total Propagated Uncertainty MDC - Minimum Detectable Concentration

BDL - Below Detection Limit

Data Package ID: GSS1210098-1

Date Printed: Friday, November 02, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC

Page 2 of 3

LIMS Version: 6.618

Gamma Spectroscopy Results

PAI 713 Rev 12 Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1210098

Client Name: SENES Consultants Limited

ClientProject ID: Church Rock Phase II SENES 350180-203 (200)

Field ID: 003-GSG-RB Lab ID: 1210098-3

Library: RA226.LIB

Sample Matrix: SOLID

Prep SOP: PAI 739 Rev 10

Date Collected: 05-Oct-12

Date Prepared: 09-Oct-12

Date Analyzed: 30-Oct-12

Prep Batch: GS121011-2 QCBatchID: GS121011-2-1

Run ID: GS121011-2A Count Time: 30 minutes Report Basis: Dry Weight Final Aliquot: 230 g Prep Basis: Dry Weight

Moisture(%): NA Result Units: pCi/g File Name: 121329d07

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	Lab Qualifier
13982-63-3	Ra-226	0.70 +/- 0.19	0.32	1	LT

Comments:

Qualifiers/Flags:

- U Result is less than the sample specific MDC or less than the associated TPU.
- Y1 Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 Chemical Yield outside default limits.
- LT Result is less than Requested MDC, greater than sample specific MDC.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M The requested MDC was not met.

Abbreviation

- TPU Total Propagated Uncertainty

 MDC Minimum Detectable Concentration
- BDL Below Detection Limit

Data Package ID: GSS1210098-1

Date Printed: Friday, November 02, 2012

- SQ Spectral quality prevents accurate quantitation.
- SI Nuclide identification and/or quantitation is tentative.
- TI Nuclide identification is tentative.
- R Nuclide has exceeded 8 halflives.
- G Sample density differs by more than 15% of LCS density.

ALS Environmental -- FC Page 3 of 3

LIMS Version: 6.618

APPENDIX H

Costs



200 W. Allegan Street, Suite 300 Plainwell, Michigan 49080-1397 Telephone: (269) 685-5181 Fax: (289) 685-5223 www.CRAworld.com

October 26, 2012

Reference No. 79976

Mr. Billy Ray BHP Copper Inc. 8950 N Oracle Road Suite 150 Tucson, Arizona 85704

Dear Mr. Ray:

Re: Church Rock Site 1 - Road Remediation

Church Rock, New Mexico

Enclosed is Conestoga-Rovers & Associates' (CRA) invoice in the amount of \$58,700.00. This invoice has been completed in accordance with Contract/Agreement Number RCM-2011-031, Purchase Order No. 4500672909.

If you have any questions regarding this invoice please feel free to call me.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

- A Fulto for Don Osterhout

Project Manager

Encl.



hhip billition 8950 N. Oracle Rd, Suite 150 Tuccon, AZ 85704 Artar Billy Ray / Kea Black Parchase Order No. 450667299 Contract No: RCM-2011-031

INVOICE

Church Rock 1 Road Removal & Replacement
Church Rock, NM
CRA Project9: 079976
CRA Invoice Ne: 36207

	28		QUANTITY	1 20		QUANTITY	QUANTITY	0.0000000000000000000000000000000000000	THIS	AMOUNT
Phase No.	Die	Description	GIS	MU	BUDGET	APPLICATIONS	APPLICATION	Unit Rate	APPLICATION	APPLICATIONS
10		Mobilization	-	55	\$19,400.00	3.00	1	\$19,400.00	\$19,400.00	\$19,400.00
100	1.5	Temp & Permanent Site & Controls	1	13	\$32,000,00	3/00		\$12,000.00	\$32,000.00	\$32,000.00
1	40			18	\$19,400.00	000	0	\$19,400.00	80.00	00'0\$
4	077	Celifornicalities								
83	2.5	Cattle Coard	1	T&M	\$35,000,00	000	0	\$25,000.00	\$0.00	00'0\$
8	3.0	Site Specific Training & Project Review	1	SI.	\$2,500,00	1.00	1	\$2,500.00	\$2,500.00	\$2,500.00
40	4.0	Initial Survey	1	13	\$4,800,00	1.00	1	\$4,800.00	\$4,800.00	84,800.00
45	5.0	Traffic Control	1	LS.	\$5,733.00	000	0	\$5,733.00	00'0\$	00'0\$
56		Health & Safety (Bill Doyle)	1	T&M	80.00	000	0	20.00	80.00	00'0\$
09	6.0	Erosion Control - 36" Silt Fence	0006	5	\$16,920.00	0000	0	51.88	00'0\$	\$0.00
99	2.0	Security	868	Ħ	\$14,061.60	000	0	\$16.20	8000	00'05
20	8.0	Dust Control	88	DAY	\$71,994.00	000	0	\$1,893.00	80.00	80/08
75	0'6	Removal of Road & Surrounding Soils	17,000	ŏ	\$79,390.00	000	0	28.67	80,00	\$0.00
80	10.0	Re-Installation of General FIII	15,000	ō	\$559,200.00	00'0	0	\$37.28	80.00	30.00
88	11.0	Re-Installation of 1" Rowl Gravel	2,800	TON	\$75,880.00	000	0	\$27.10	\$0.00	\$0.00
28	12.0	Installation of Cover Material for Cip	4,500	ŏ	\$167,760.00	00'0	0	\$37.28	80,00	\$0.00
88	13.0	Bevegetation	12	ACRE	\$45,264.00	000	0	53,772.30	\$0.00	\$0.00
		STATE OF STA	ATE							\$58,700.00

AMOUNT DUE THIS INVOICE

\$58,700.00

079978 Invelor 093912

REMITTANCE ADDRESS
Conestogs-Rowers & Associates, Inc.
Department 406
TO Ecc 8000
Buffalo, NY 14287

Page1

EQUAL EMPLOYMENT OPPORTUNITY EMPLOYER



200 W. Allegan Street, Suite 300 Plainwell, Michigan 49080-1397 Telephone: (259) 685-5181 Fax: (269) 685-5223 www.CRAworld.com

November 21, 2012

Reference No. 079976

Mr. Billy Ray BHP Copper Inc. 8950 N Oracle Road Suite 150 Tucson, Arizona 85704

Dear Mr. Ray:

Re

Church Rock Site 1 - Road Remediation

Church Rock, New Mexico

Enclosed is Conestoga-Rovers & Associates' (CRA) invoice in the amount of \$178,915.50 for period ending October 28, 2012. This invoice has been completed in accordance with Contract/Agreement Number RCM-2011-031 and Purchase Order No. 4500672909. Lump sum items are being invoiced as percent complete and unit prices for the quantities complete.

Following is the description of work completed for each item requiring payment:

Item 5.0, Traffic Control. At of the end of October, CRA had completed approximately 50% of the Church Rock road remediation. CRA is requesting payment for 50 percent on this item.

Item 6.0, Silt Fence. CRA is requesting payment for 4,000 lineal feet of silt fence that was installed.

Item 7.0, Security. Through the first 3 weeks of site work, Gallup Security has been on site approximately 310 hours. Backup for the dates and times that Gallup Security was on site for the entire project will be included in the last invoice.

Item 8.0, Dust Control. During the month of October, CRA performed dust control activities, and is requesting payment for 18 days.

Item 9.0, Removal of Road and Surrounding Soils. CRA began removing the road and surrounding material during the second week of October, and is requesting payment for 12,000 cubic yards of removal (this quantity estimate is based on truckloads of material being placed on the waste pile). CAD files and as-builts will be included in the last invoice, which will be used as backup for this item.

Equal Employment Opportunity Employer



November 21, 2012

Reference No. 79776

If you have any questions regarding this invoice please feel free to call me.

-2-

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Don Osterhout Project Manager

Encl.



hbp billition 8989 N. Oracle Rd, Suite 339 Tunous, AZ 8704 Aftin Billy Ray /Ken Black Purchase Order No. 450407209 Contract No. RCM-2613-631

Charrell Rock 1 Road Removal de Replacement Charrell Rock, NM CRA Projecté 1079976 CRA Invoice No. 269454 November 21, 2012

INVOICE

Phase No.	Bid Item No.	Description	ORIGINAL	M	BUDGET	QUANTITY ALL APPLICATIONS	QUANTITY THIS APPLICATION	Unit Rate	AMOUNT THIS APPLICATION	AMOUNT ALL APPLICATIONS
10	1.0	Mobilization	1	57	\$19,400,00	1	0	\$19,400,00	80.00	519,400.00
15	1,5	Temp & Permanent Sile & Controls	1	\$	\$32,000,00	1	0	\$32,000.00	90.00	\$22,000.00
20	20	Demobilization	1	SI	\$19,400.00	0	0	\$19,400.00	00'08	2000
10	272	Cattle Ocard	1	T&M	535,000,00	0	0	\$58,000.00	80.00	80.00
8	3.0	Site Specific Training & Project Review	-	1.5	\$2,500.00	1	0	\$2,500.00	8000	82,800.00
9	470	Initial Survey	1	51	\$4,800.00	1	0	\$4,800.00	8000	84,800,00
65	8.0	Traffic Control	-	81	\$5,733.00	0.50	020	\$5,739.00	\$2,866.30	\$2,866,30
99	9'9	Erosion Coeleol - 36" Silt Pence	6000	3	\$16,920.00	4,000	4,000	87.88	\$7,520.00	\$7,520.00
3	6.5	Wattle Installation	6160	57	\$31,169.60	0	0	\$5.06	\$0.00	\$0.00
89	979	Broston Control Blanket	22,500	SE	89,000,00	0	0	80.40	\$0.00	00'08
430	7.0	Security	898	HE	\$12,586.00	310	310	\$14.50	84,495.00	\$4,495.00
2	8.0	Dust Control	38	DAY	871,994.00	18	18	\$1,893.00	834,074.00	\$54,074.00
12	0.0	Removal of Road, & Surrounding Soils	12,000	ò	\$186,160,42	12,000	12,000	\$10.50	\$129,960.00	\$129,960.00
88	10.0	Se-betallation of General FIII	15,000	S	\$257,125.00	0	0	\$50.25	\$0.00	90.00
8	11.0	Se-Installation of 17 Road Ceavel	2,800	NOI	\$75,380,00	0	0	\$27.10	80.00	90.00
88	12.0	Installation of Cover Material for Cap	4,500	č	\$136,125.00	0	0	\$20.25	00708	20.00
88	13.0	Revegetation	12	ACRE	\$51,298.00	0	0	\$3,912.25	80,00	80.00
		TOTAL TODATE	ATE							\$237,615.56

AMOUNT DUE THIS INVOICE

5178,915.50

275676 Invaios 102812

Page1

REMITTANCE ADDRESS
Consistings-Roses & Associates, Inc.
Dayariment 454
70 Sec 8100
Buffsia, NY 14287
EQUAL EMPLOYMENT OPPORTUNITY EMPLOYER



200 W. Allegan Street, Suite 300 Plainwell, Michigan 49080-1397 Tellephone: (269) 685-5181 Fax: (269) 685-5223 www.CRAworld.com

January 11, 2013

Reference No. 079976

Mr. Billy Ray BHP Copper Inc. 8950 N Oracle Road Suite 150 Tucson, Arizona 85704

Dear Mr. Ray:

Re

Church Rock Site 1 - Road Remediation

Church Rock, New Mexico

Enclosed is Conestoga-Rovers & Associates' (CRA) invoice in the amount of \$737,373,74 for period ending November 25, 2012. This invoice has been completed in accordance with Contract/Agreement Number RCM-2011-031 and Purchase Order No. 4500672909. Lump sum items are being invoiced as percent complete and unit prices for the quantities complete.

Following is the description of work completed for each item requiring payment:

Item 2.0, Demobilization. CRA has completed the project and demobilized off site.

Item 2.5, Cattle Guard. CRA completed the installation of the cattle guard and associated items such as fencing and rip rap installation.

Item 5.0, Traffic Control. CRA has completed the project and is requesting full payment for this item.

Item 6.5, Wattle Installation. CRA has completed installation of 6,160 lineal feet of wattles.

Item 6.6, Erosion Control Blanket. CRA has completed installation of 22,500 square feet of erosion control blanket.

Item 7.0, Security. Gallup Security Service was on site for a total of 558 hours for this invoicing period. Back up for this item has been included.

Item 8.0, Dust Control. During the month of November, CRA performed dust control activities, and is requesting payment for 19 days.

> Equal Employment Opportunity Employer



January 11, 2012

Reference No. 79776

-2-

Item 9.0, Removal of Road and Surrounding Soils. CRA has based quantities associated with this item on our survey information. CAD files and as-builts have been included with this invoice as backup for this item.

Item 10.0, Re-Installation of General Fill. CRA has based quantities associated with this item on our survey information. CRA has based quantities associated with this item on our survey information.

Item 11.0, Re-Installation of Road Gravel. CRA has included weight tickets with this invoice as backup for this item.

Item 12.0, Installation of Cover Material for Cap. CRA has based quantities associated with this item on our survey information. CAD files and as-builts have been included with this invoice as backup for this item.

Item 13.0, Revegetation. CRA has completed the application of the hydromulch and seeding. CAD files have been included with this invoice as backup for this item.

If you have any questions regarding this invoice please feel free to call me.

Yours truly,

CONESTOGA-BOVERS & ASSOCIATE

Don Osterhout Project Manager

Encl.



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Tuesco, AZ SSTON
Attus: Rilly Pay / Kem Riack
Purchase Orice: Not 4514672509
Contract New ROA-Sattle State
Church Rood, I. Road Removal & Replacement
Church Rood, Not M. Removal & Replacement
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INVOICE

No. Nam No. Description BID UM BUDGET APPLICATIONS 1.0 Mobilization 1 1.5 \$19,400.00 1 2.0 Demobilization 1 1.5 \$20,000.00 1 2.2 Cottle Gaard 1 1.5 \$10,400.00 1 2.2 Cottle Gaard 1 1.5 \$20,000.00 1 2.2 Cottle Gaard 1 1.5 \$2,500.00 1 2.2 Cottle Gaard 1 1.5 \$2,500.00 1 2.5 Cottle Gaard 1 1.5 \$2,500.00 1 3.0 Site Specific Training & Project Ravisor 1 1.5 \$2,500.00 1 4.0 Infetial Servey 1 1.5 \$2,500.00 1 1 5.0 Trailie Legalization 1 1.5 \$2,500.00 1 1.5 \$2,500.00 1 6.0 Brostle Control 1 1.5 \$2,500.00 1 1.5	180	958		QUANTITY			VITTANDO	THIS		AMOUNT	AMOUNT
1.0 Mobalization 1 LS \$18,400,00 1 2.2 Cartle Council 1 LS \$20,000,00 1 2.2 Cartle Council 1 LS \$19,400,00 1 2.5 Cartle Council 1 LS \$2,500,00 1 2.5 Calvert herallarion 1 LS \$2,500,00 1 2.6 State Specific Training & Project Review 1 LS \$2,500,00 1 4.0 Sariat Survey 1 LS \$2,500,00 1 5.0 Traditic Control 40 LS \$2,500,00 1 6.0 Brosice Control 40 LS \$2,500,00 1 6.0 Brosice Control 40 LS \$2,500,00 1 6.0 Brosice Control 40 RS \$2,500,00 1 6.0 Brosice Control 40 RS \$2,500,00 1 6.0 Brosice Control 40 RS \$2,	-	m No.	Description	SID	MD	BUDGET	APPLICATIONS	APPLICATION	Unit Rate	APPLICATION	APPLICATIONS
1.5 Temp & Permanent Res & Controls 1 LS \$80,000.00 1 2.2 Cacta Gaurd 1 1.6 \$19,400.00 1 2.5 Cacta Gaurd 1 1.6 \$19,400.00 1 2.5 Cacta Gaurd 1 1.6 \$2,500.00 1 3.0 State Specific Training & Project Review 1 1.5 \$6,500.00 1 4.0 Evicial Survey 1 1.5 \$6,500.00 1 5.0 Trailie Control 30 State Specific Training & Project Review 1 1.5 \$6,500.00 1 5.0 Trailie Control 30 State Specific Training & Project Review 30.00 1.9 \$6,500.00 1 5.0 Trailie Control 30 State Specific Training & Project Review \$6,150 1.7 \$6,150 1.7 \$6,150 1.7 \$6,150 1.7 \$6,150 1.7 \$6,150 1.7 \$6,150 1.7 \$6,150 1.7 \$6,150 1.7 \$6,150 1.7 \$6,150 1.7 <td></td> <td>0.1</td> <td>Mobilization</td> <td>1</td> <td>\$1</td> <td>\$19,400,00</td> <td>1</td> <td>0</td> <td>\$19,400.00</td> <td>80.00</td> <td>\$19,400.00</td>		0.1	Mobilization	1	\$1	\$19,400,00	1	0	\$19,400.00	80.00	\$19,400.00
2.0 Demobilization 1 L5 \$19,400.00 1 2.2 Caritle Guard 1 Tabal \$15,400.00 1 2.2 Caritle Guard 1 L5 \$8,994.00 1 3.0 Sita Spindite Training & Project Review 1 L5 \$2,000.00 1 4.0 Britis Control 5 Trailing Control 1 L5 \$4,000 1 5.0 Trailing Control 5 1 L5 \$4,000 1 6.0 Brosten Control 5 1 L5 \$4,000 1 6.0 Brosten Control 5 5 1 <		57	Temp & Personnent She & Controls	1	53	\$32,000.00	-	0	\$32,000.00	80,00	\$32,000.00
2.2 Cartie Gaard 1 Toky \$15,000,00 1 2.5 Calvert headbasion 1 1.5 \$2,500,00 1 4.0 Seles Specific Training & Project Review 1 1.5 \$2,500,00 1 4.0 Andald Sarvey 1 1.5 \$2,500,00 1 5.0 Trailie Control 1 1.5 \$4,000 1 6.0 Brostein Control 1.0 \$1.5 \$1,000 1 6.0 Brostein Control 50 Sill Ferre \$2,000 1.0 \$1,000 6.6 Brostein Control 50 Sill Ferre \$2,000 1.0 \$1,000 6.6 Brostein Control 50 Sill Ferre \$2,000 1.0 \$1,000 6.6 Brostein Control 50 Sill Ferre \$2,000 1.0 \$1,000 7.0 Security \$2,000 1.0 \$1,000 \$2,000 8.0 Dost Control \$1,000 \$2,000 \$1,000 9.0 Removable Security	H	2.0	Demobilization	1	53	\$19,400.00	1	1	\$19,400.00	\$19,400.00	\$19,400,00
2.5 Collovert Installation 1 1.5 \$8,994,60 1 4.0 Satisfyliable of Project Review 1 1.5 \$2,500.00 1 5.0 Traditic Centrol 1 1.5 \$4,500.00 1 5.0 Traditic Centrol 1.9 \$1.5 \$1.5 1 5.0 Traditic Centrol 1.9 \$1.5 \$1.5 1 6.0 Notatile Examination 1.7 1.5 \$1.50 1 6.6 Notatile Examination 5.150 1.7 \$1.50 4.00 6.6 Notatile Examination 5.150 1.7 \$1.50 2.50 6.6 Brossinate Centrol \$1.0 \$1.0 \$1.0 \$1.50 7.0 Security \$2.5 \$1.0 \$1.0 \$1.0 \$1.0 8.0 Dest Centrol \$1.0 \$1.0 \$1.0 \$1.0 \$1.0 8.0 Dest Centrol \$1.0 \$1.0 \$1.0 \$1.0 \$1.0 9.0	H	П	Cattle Guard	1	Ten	\$35,000.00	1	1	80,420.00	\$30,420.00	890,420.00
3.0 State Specifie Training & Project Review 1 1.5 \$2,500,00 1 4.0 India Servey 1 1.5 \$4,500,00 1 5.0 Traffic Centrel 1 1.5 \$4,500,00 1 6.0 Brosten Centrel Sarbert \$4,00 1.9 \$1,400 4,000 6.1 Wintile Institution \$6,150 1.7 \$1,500 \$4,000 6.6 Brosten Centrel Sarbert \$6,150 1.7 \$1,150,00 \$2,150 7.0 Security 0,400 1.2 \$1,150,00 \$1,150 7.0 Security 0,400 1.2 \$1,150,00 \$2,150 8.0 Dust Centrel \$1,000 C.Y \$1,150,00 \$7 9.0 Remissabilities of Social de Surrouncillag Solis 17,000 C.Y \$1,15,173 10.0 Rechretabilities of Cover Material Str. Cup 2,500 TON \$12,134,125,00 13,677 12.0 Incentilization of Cover Material Str. Cup 4,500 C.Y \$12,135,125,00<	H	52	Culvert Installation	1	57	58,594,00	1	1	\$8,394.00	\$8,594.00	88,394.00
4.0 Initial Garway 1 1.5 84,800,00 1 5.0 Tradific Control 4,00 1 1.5 86,735,00 1 6.0 Rinesten Control 30 Nintia Institution 4,00 1.0 81,400,00 4,00 6.5 Worthe Institution 5,160 1.0 81,400,00 4,00 6.6 Encisten Control 3,00 1.0 81,400 4,00 7.0 Security 22,350 5F 89,000,00 22,500 8.0 Dost Control 3,00 1.0 80,000,00 22,500 8.0 Dost Control 3,00 1.0 87,236,00 37 9.0 Removal of Ecold & Surrounding Soils 17,000 CY \$188,160,42 17,374 10.0 Re-installation of Cover Manerial for Cape 2,800 CY \$12,000 3,570 12.0 Installation of Cover Manerial for Cape 4,500 CY \$126,125,00 3,570 13.0 Revessebation 12 4,500	+	3.0	Site Specific Training & Project Review	1	15	82,500.00	1	0	\$2,500.00	80.00	82,500.00
5.0 Traditic Centred 1 1.5 86/735.00 1 6.0 Brosten Centred - 30° Stil Ferce 9,000 1.9 \$56,000.00 4,000 6.6 Writtle Estalization 6,180 U.P. \$51,000.00 \$2,500 6.6 Brosten Centred Starbert 22,500 \$E \$50,000.00 22,500 7.0 Security Manual Centred Starbert 3.8 DAY \$72,300 8.0 Dest Centred Starbert 17,000 CY \$188,160.42 17,374 9.0 Remembranch Control Fill 15,000 CY \$188,160.42 17,374 10.0 Re-breatharden of Tone Material Fill 15,000 CY \$128,125.00 13,677 12.0 Installarian of Cover Material Fr. Cap 4,000 CY \$12,158.00 3,570 13.0 Reversabilition of Cover Material Fr. Cap 4,000 CY \$12,158.00 8 13.0 Reversabilition of Cover Material Fr. Cap 4,000 CY \$12,158.00 8	\mathbb{H}	07	Indial Survey	1	53	54,800.00	1	0	\$4,800.00	80.00	94,800.00
6.0 Renested Control Market Perce 8,000 LP \$15,000.00 4,000 6.6 Encision Control Market Earthounding Soils 12,000 CCY \$189,160,00 22,000 7.0 Security 0649 PER \$5,236,00 22,000 8.0 Dust Control Soils Earthounding Soils 17,000 CCY \$189,160,42 17,374 10.0 Rechestablishion of Vision General Pill 15,000 CCY \$189,160,42 17,374 11.0 Rechestablishion of Vision General Pill 15,000 CCY \$189,160,42 17,374 12.0 Insullarish of Cover Material Soils Cap 4,000 CCY \$180,125,00 13,677 12.0 Insullarish of Cover Material Soil 20,000 CCY \$180,125,00 13,677 12.0 Insullarish of Cover Material Soil 20,000 CCY \$180,125,00 13,677 12.0 Insullarish of Cover Material Soil Cover \$4,000 CCY \$180,125,00 13,677 12.0 ACRE \$18,125,00 18	+	П	Traffic Centrel	1	ST	85,733.00	-	0.59	\$5,733.00	\$2,866.50	55,733.00
6.5 Wartie freshlichten 6.160 LP 891,468-60 6,150 6.6 Brosten Centrol Bachet 22,380 SF 85,000.00 22,500 7.0 Security 040 FIR 572,386.00 785.90 8.0 Dost Centrel 38 DAY 871,984.00 37 9.0 Removal of Food & Surrouncing Soils 17/000 CY \$188,160.42 17/374 10.0 Re-britablishion of Central Fill 15,000 CY \$188,160.42 17/374 12.0 Re-restablishion of Central Fill 2,800 TON \$15,000 2,009.44 12.0 Re-restablishion of Cover Material Fr Cug 4,500 CY \$156,125.00 3,570 12.0 Re-restablion 12 ACRE 813,536.00 8	\parallel	0.0	Brosica Control - 36° Silt Yence	00076	129	\$16,920.00	4,000	0	\$1.88	80.00	87,520,00
6.6 Brostein Centrol Blacket 22,350 6F \$6,000,00 22,500 7.0 Security 040 138 57,2366,00 785.50 8.0 Dest Centrol 38 DAY 87,1394,00 57 9.0 Remission of Sound & Surrounding Soils 17,000 CY \$188,46,42 17,574 10.0 Re-installation of General Fill 15,000 CY \$18,000 13,677 12.0 Installation of Cover Material for Cap 4,000 CY \$12,000 3,570 13.0 Revestabilition of Cover Material for Cap 4,000 CY \$12,000 3,570 13.0 Revestabilition of Cover Material for Cap 4,000 CY \$12,000 3,570 13.0 Revestabilition of Cover Material for Cap 4,000 CY \$12,000 3,570	H	П	Wettle Installation	6180	3	831,169.60	6,180	6160	\$5.06	\$31,169.60	\$51,169,60
7.0 Security 040 TRR \$52,246,00 785.50 8.0 Dast Control 38 DAY \$71,934,00 S7 9.0 Removaled Foad & Surrounding Soils 17,000 CY \$188,160,42 17,374 10.0 Re-installation of Fload General Pill 15,000 CY \$285,125.00 13,673 12.0 Re-installation of Vision General Fig. Cup 2,800 TON \$12,080,00 2,099.48 12.0 Installation of Cover Material for Cup 4,500 CY \$120,000 8,570 13.0 Revessibilition 12 ACRE \$812,630 8,570	\mathbb{H}	979	Broston Control Manket	22,500	15	59,000,00	22,500	22,500	30.40	89,000,00	99,000,00
8.0 Dust Centrel 58 DAY \$71,934,00 57 9.0 Removal of Ecoal & Surrounding Soils 17,000 CY \$188,160,42 17,374 10.0 Re-institution of General Pill 13,000 CY \$28,725,00 13,673 11.0 Re-institution of 1"Road General Pill 2,800 TON \$73,880,00 2,099.44 12.0 Ensithindees of Cover Material for Cup 4,500 CY \$136,125,00 3,870 13.0 Revessibition 12 ACRE 891,560,00 8	H	П	Security	999	NE NE	512,386.00	785.50	475.50	\$14.50	86,894,75	\$11,389,75
9.0 Removal of Road & Eurocounding Souls 17,000 CV \$188,160.42 17,374 10.0 Re-brestabledon of General Pill 13,000 CY \$287,125.00 13,473 13.0 Re-brestabledon of General Pill 2,807 TON \$73,890.00 2,099.48 12.0 Installardon of Cover Material by Carp 4,500 CY \$136,125.00 3,570 13.0 Revessabilion 12 ACRE 891,560,250 8	H	П	Dast Ceatrol	38	DAY	\$71,934,00	28	19	\$1,898.00	\$35,967.00	\$70,041.00
10.0 Re-Installation of General Pill 15,000 CY \$285,125.00 13,673 11.0 Re-Installation of V Road General Fig. 2,800 TON \$12,889,00 2,099.48 12.0 Installation of Cover Material for Cape 4,500 CY \$126,125.00 3,570 13.0 Revessibilition 12 ACRE 891,580.00 8	+	970	Removal of Road & Surrounding Soils	17,000	ó	\$188,160.42	17,374	5,374	\$10.83	\$36,200.42	\$188,160.42
13.0 Re-Installation of Cover Material for Carp 4,500 CY \$136,125,00 3,570 13.0 Revesebblion 12 ACRE 891,561,25,00 8,570	H	0.0	Re-Installation of General Fill	15,000	5	\$257,125.00	13,673	13,673	\$25.92	\$556,401.16	\$254,404.16
12.0 Installation of Cover Material for Oge 4,500 CY \$136,125,00 8,570 13.0 Revestation 12 ACRE 881,298.00 8	H	10	Re-Installation of 1" Road Gravel	2800	NOI	\$75,880,00	2,099.48	2,089.A6	\$27.10	16 929 968	16 109 955
15.0 Revegelation 12 ACRE 831.296.01 8	₩	2.0	Installation of Cover Material for Cap	4,500	ő	\$136,125.00	3,570	\$,570	\$25.92	\$92,534,40	\$92,534.40
	88	3.0	Revegebation	12	ACRE	881,298.00	80		83,912.25	\$31,258.00	\$21,298.00
TOTAL TO DATE			TOTAL TO DATE								\$974,989,34



Invoice

RT 2 BOX 52
GALLUP, NM 87301
OFFICB: (505) 726-1740 or 1-866-228-5245
FAX: (505) 726-1741

Date	Invoice #
11/15/2012	56748

48 0003464

BII To	
CRA	
Affn: Accounts Payable	
200 W Allegan St, Suite 300	
Plainwell, MI 49080	

Ship To	

Net 07 MM 11/15/2012 Gallup	P.O. Number	Terms	Rep	Ship	Via	F,O.B.		Project
2,089.48 Dirt & Gravel 2089.48 ton Base Course (11.13.12, 11.14.12, 11.15.12) ******REVISED INVOICE***** (Wrong price per ton) Sales Tax Plainwell Approval Of Invoice Project # 579.7% - Date 1/-20.12 Approval G/L Coding 56.60001 PO# 40.5.7222/	4052221	Net 07	MM	11/15/2012		Gallup		
11.15.12) ******REVISED INVOICE***** (Wrong price per ton) Sales Tax Plainwell Approval Of Invoice Project # \$79.776 - Date 1/-20.12 Approval \$6.60001 PO# 4057222/	Quantity	Item Code		Description	on	Pri	ce Each	Amount
	2,089.48	Dirt & Gravel	11.15.12) *****REV (Wrong pr Sales Tax	Plainwe pproval Of In roject # 579 ate 1/-2 pproval 566 0 # 403	11 voice 976 - 83 0.12			



GALLUP SECURITY SERVICE

Invoice 18798

#5 Idaho Circle • Gallup, NM 87301 505-722-7645

PROVIDING PROFESSIONAL SERVICE

erry:	CHURG	H Rock, NM	STATE	
атте			SIAIE	ZIP
Date	DAY	START	ENDING	Hours
10/2	THE TRA	4ROPE	530pm	3
12	TOL	SERPEZ.	hzarm	13
13	Wes	53000	630 AM	13
19	THOR	Saper	630 AM	13
15	FRI	Sugar	680 AM	/3
16	SAT	930Am	930 AM	24
0/2	SUN	930 AM	630HM	21
18	Mar	530pm	630AM	/3
0/9	THE	Stape	630 pm	13
110	100	530pm_	630 AM	13
3/11	7144	530 pm	630 Am	1,3
112	FILL	530,00	630 Am	13
113	SAT	930 Am	9.30 pm	24
11.1	See	9 saker	GRO Am	21
1/5-	Mar	53орт	630 Am	15
116	Tue	5 m pm	620 400	13
0/17	Ver	53apm	630 Am	13
1/18	THOR	Бэоре	630 pm	13
/19	Fad	53npm	630 Ma	13
120	505	930 An	950 AM	. 24
/21	50W	930 pm	650 Am	21

GALLUP SECURITY SERVICE

Invoice

#5 Idaho Circle • Gallup, NM 87301 505-722-7645

18799

PROVIDING PROFESSIONAL SERVICE

TO:	NEESTA =	BOVERS AS	SOC. (CPA)	DATE: //-3-	20/2
CITY:		590		STATE Z	IP
DATE	DAY	START	ENDING	HOUR-	
10/20	Most	530 per	631pm	13	
10/23	THE	530 pm	hzonn		
10/24	Wes	531 pm	630 per	/3	-
10/25	THUC	58apn	630Am	/3	
10/26	Fre	Sopo	bann	13	
10/27	SAT	9.20 pm	920 100	24	
10/28	Sue	935 pm	hisapm	2/	
10/29	Med	530pm	650M	/3	
10/30	Tue	530,000	630 AM	13	
10/31	Wez	53грт	630AM	469	-
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Plainwell oval Of Invo	pice 105				
** 7997	6 469 N	POURS X #	- PEK.	The state of the s	-1,
11/12/	12			.8512 .74	×
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ling 566.000	7				<u> </u>
40523	3115		10 0 W		

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GALLUP SECURITY SERVICE

Invoice

#5 Idaho Circle • Gallup, NM 87301 505-722-7645 18861

PROVIDING PROFESSIONAL SERVICE

Roles Anne	(CKA)	TE/(rr. 27 20/2
Let .		ZIP
530 04	6.30 AM	/.3
		/3
930 AM		24
930 AM		21
		/3
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930 AM	930 AM	24
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530 pm	630 AM	13
	430 AM	13
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	530 pm 530 pm 530 pm 930 AM 530 pm 530 pm	530 pm 630 AM 530 pm 630 AM 930 AM 930 AM 930 AM 630 AM 530 pm 630 AM 930 AM 930 AM 530 pm 630 AM

Thank You

ASIO BUTTERS - COLLUP

N 0003581

GALLUP SECURITY SERVICE
#5 Idaho Circle - Gallup, NM 87301
505-722-7645

Invoice Jag &

PROVIDING PROFESSIONAL SERVICE

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	Plai	inwell				
	710000000	Of Invoice				4
	Project#	079976-				
	Date	11-27-12	101			
	Approval	Reo An DO		-		
	G/L Coding	5660001		-	1215	-
	PO#	4089316				+-
	Org Code	4013				
	(45)				
	0	V 785.5				

GOING ENTREWED - CHILLING

Thank You



121 Granton Drive Unit No. 12 Richmond Hill, Ontario Canada L4B 3N4 Tel: (905) 764-9380 Fox: (905) 764-9386

January 31, 2013

Project No: 350180-203 Invoice No: 31161

Rio Algom Mining LLC Attn: Rio Algom Mining-NM Highway 605 & 509 Grants, NM 87020 United States

Project

350180-203

Church Rock Red Water Pond Road Remedial Action

BHP

COPPER INC. P.O. 4500672911

Email Ken.Black@bhpbilliton.com cc GMW then Do Not Mail

Professional Services for the period ending December 31, 2012

Phase 200 Field Program
Professional Personnel

 Hours
 Rate
 Amount

 Liles, Darrell
 6.00
 175.00
 1,050.00

 Stager, Ronald
 1.50
 160.00
 240.00

Totals 7.50 1,290.00

Total Labour

1,290.00

Reimbursable Expenses

Lab Charges - CAD \$342.58 342.58

Total Reimbursables 1.0 times 342.58 342.58

Total this Phase \$1,632.58

Phase 300 Reporting

Professional Personnel

 Lowe, Leo
 Hours
 Rate
 Amount

 Totals
 1.00
 185.00
 185.00

 1.00
 185.00
 185.00

Total Labour 185.00

Total this Phase \$185.00

Total this Invoice in U.S. \$1,817.58

Billings to Date

	Current	Prior	Total
Labor	1,475.00	154,689.38	156,164.38
Consultant	0.00	16,757.24	16,757.24
Expense	342.58	29,875.61	30,218.19
Unit	0.00	2,047.65	2,047.65
Totals	1,817,58	203,369,88	205,187.46

PAYMENT DUE UPON RECEIPT OF INVOICE



121 Granton Drive Unit No. 12 Richmond Hill, Ontario Canada L4B 3N4 Tel: (905) 764-9380 Fax: (905) 764 9386

December 31, 2012

Project No: 350180-203

Invoice No:

31038

Rio Algom Mining LLC Attn: Rio Algom Mining-NM Highway 605 & 509 Grants, NM 87020 **United States**

Project

350180-203

Church Rock Red Water Pond Road Remedial Action BHP

COPPER INC. P.O. 4500672911

Email Ken Black@bhpbilliton.com cc GMW then Do Not Mail

Professional Services for the period ending November 30, 2012

Phase

Professional Personnel

Program Planning & Preparation

	Hours	Rate	Amount
Chambers, Douglas	.50	220.00	110.00
Wiatzka, Gerd	1.50	200.00	300.00
Totals	2.00		410.00

Total Labour

410.00

otal this Phase	₽
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Total this Phase

\$410.00

\$16,444.79

 Phase	200	Field Program				
Professiona	l Personnel	_				
			Hours	Rate	Amount	
Liles, Da	ırrell		5.00	175.00	875.00	
Stager, I	Ronald		35.50	160.00	5,680.00	
Wiatzka	, Gerd		.50	200.00	100.00	
Wilson,	Michael		35.50	67.50	2,396.25	
	Totals		76.50		9,051.25	
	Total L	abour				9,051.25
Reimbursal	ole Expenses					
Travel					1,469.54	
Lab Cha	rges				5,924.00	
	Total F	Reim bursables		1.0 times	7,393.54	7,393.54

300 Reporting Phase

Professional Personnel

PAYMENT DUE UPON RECEIPT OF INVOICE



121 Granton Drive Unit No. 12 Richmond Hill, Ontario Canada L4B 3N4 Tel: [905] 764-9380 Fax: [905] 764-9386

Project	350180-203	RAML- Church Rock RWPR R	emedial Action	Invoice	31038
		Hours	Rate	Amount	1.
Lowe,	Leo	3.00	185.00	555.00	
	Totals	3.00		555.00	
	Total Labou	Г			555.00
			Total this P	hase	\$555.00
		Tota	l this Invoice in	U.S.	\$17,409.79

Billings to Date

	Current	Prior	Total
Labor	10,016.25	144,673.13	154,689.38
Consultant	0.00	16,757.24	16,757.24
Expense	7,393.54	22,482.07	29,875.61
Unit	0.00	2,047.65	2,047.65
Totals	17,409.79	185,960.09	203,369.88



121 Granton Drive
Unit No 12
Richmond Hill, Ontario
Canada L4B 3N4
Tel: (905) 764-9380
Fax: (905) 764-9386

November 29, 2012 Project No: 350180-203

Invoice No: 30826

Rio Algom Mining LLC Attn: Rio Algom Mining-NM Highway 605 & 509 Grants, NM 87020 United States

Project 350180-203 Church Rock Red Water Pond Road Remedial Action

Project	BHP COPPER INC. P.O. 4500672911				
Professional S	ervices for the	period ending October 31, 2012	1000012011		
Phase	100	Program Planning & Preparation			
Professional P	ersonnel				
		Hours	Rate	Amount	
Chambers,	Douglas	7.50	220.00	1,650.00	
Chung, Phil	lip	.50	65.00	32.50	
Wiatzka, Ge	erd	7.00	200.00	1,400.00	
Wilson, Micl	hael	9.50	67.50	641.25	
	Totals	24.50		3,723.75	
	Total Labo	ur			3,723.75
Unit Billing					
Printing Col	our			1.35	
	Total Units	3	1.0 times	1.35	1.35
			Total this Phase		
			Total this	Phase	\$3,725.10
— — — — — Phase		Field Program	Total this	Phase	\$3,725.10
— — — — Phase		Field Program	Total this — — —	Phase	\$3,725.10
· · · · · · ·		Field Program Hours	Total this — — — —		\$3,725.10
	ersonnel	· ·			\$3,725.10
Professional Po	e rsonnel anda	Hours		Amount	\$3,725.10
Professional Po	e rsonnel anda	Hours 1.00	Rate 95.00	Amount 95.00	\$3,725.10
Professional Po Draine, Ama Liles, Darrel	ersonnei anda i	Hours 1.00 220.00	Rate 95.00 175.00	Amount 95.00 38,500.00	\$3,725.10
Draine, Ama Liles, Darrel Lowe, Leo	ersonnel anda I ald	Hours 1.00 220.00 2.00	Rate 95.00 175.00 185.00	Amount 95.00 38,500.00 370.00	\$3,725.10
Professional Po Draine, Ama Liles, Darrel Lowe, Leo Stager, Ron	ersonnel anda I ald erd	Hours 1.00 220.00 2.00 223.50	Rate 95.00 175.00 185.00 160.00	Amount 95.00 38,500.00 370.00 35,760.00	\$3,725.10
Professional Po Draine, Ama Liles, Darrel Lowe, Leo Stager, Ron Wiatzka, Ge	ersonnel anda I ald erd	Hours 1.00 220.00 2.00 223.50 58.00	Rate 95.00 175.00 185.00 160.00 200.00	Amount 95.00 38,500.00 370.00 35,760.00 11,600.00	\$3,725.10
Professional Po Draine, Ama Liles, Darrel Lowe, Leo Stager, Ron Wiatzka, Ge	ersonnel I I ald erd nael	Hours 1.00 220.00 2.00 223.50 58.00 79.50 584.00	Rate 95.00 175.00 185.00 160.00 200.00	Amount 95.00 38,500.00 370.00 35,760.00 11,600.00 5,366.25	\$3,725.10
Professional Po Draine, Ama Liles, Darrel Lowe, Leo Stager, Ron Wiatzka, Ge	ersonnel anda I ald erd nael Totals Total Labo	Hours 1.00 220.00 2.00 223.50 58.00 79.50 584.00	Rate 95.00 175.00 185.00 160.00 200.00	Amount 95.00 38,500.00 370.00 35,760.00 11,600.00 5,366.25	
Professional Po Draine, Ama Liles, Darrel Lowe, Leo Stager, Ron Wiatzka, Ge Wilson, Mich	ersonnel anda I ald erd nael Totals Total Labo Expenses	Hours 1.00 220.00 2.00 223.50 58.00 79.50 584.00	Rate 95.00 175.00 185.00 160.00 200.00	Amount 95.00 38,500.00 370.00 35,760.00 11,600.00 5,366.25	

Continued on Page 2

PAYMENT DUE UPON RECEIPT OF INVOICE



					TUX.	(705) 704 750
Project	350180-203		h Rock RWPR	Remedial Action	Invoice	30826
Emplo	yee Expenses – U yee Expenses – C	S \$9,100.31			9,100.31	
	S Equipment Rent				3,344.51 99.91	
OLIVE		eimbursables		1.0 times	19,341.32	40 244 25
	i Ottal IN	cillibul sapies		1.0 times	15,341.32	19,341.32
				Total this F	Phase	\$111,032.57
hase	300	Reporting				
Profession	nai Personnel					
			Hours	Rate	Amount	
	, Steven		1.00	195.00	195.00	
_	, Phillip		2.00	65.00	130.00	
	in, Diana		3,50	75.00	262.50	
McCaf	frey, Donald		2.00	85.00	170.00	
	Totals		8.50		757.50	
	Total La	bour				757.50
Reimburs	able Expenses					
Courie	•				190.17	
	Total Re	eimbursables		1.0 times	190.17	190.17
Init Billing	g					
Printing	g Black & White				121.20	
Printing	g Colour				108.00	
Record	lable CDs				3.00	
	Total Ur	nits		1.0 times	232.20	232.20
				Total this F	hase	\$1,179.87
			Tot	tal this invoice ir	1 U.S.	\$115,937.54
311lings to	Date					
		Current	Prior	Total		
Labor		96,172.50	48,500.63	144,673.13		
Consul	tant	0.00	16,757.24	16,757.24		
Expens	se	19,531.49	2,950.58	22,482.07		
Unit		233,55	1,814.10	2,047.65		
Totals		115,937.54	70,022.55	185,960.09		



121 Granton Drive Unit No. 12 Richmond Hill, Ontario Canada L4B 3N4 Tel: (905) 764 9380 Fax: (905) 764-9386

October 19, 2012

Project No: 350180-203

Invoice No:

30604

Rio Algom Mining LLC Attn: Rio Algom Mining-NM Highway 605 & 509 Grants, NM 87020 United States

Project

350180-203

Church Rock Red Water Pond Road Remedial Action

BHP COPPER INC. P.O. 4500672911 Professional Services for the period ending September 30, 2012 Phase 100 Program Planning & Preparation Professional Personnel Hours Rate Amount Brown, Steven 3.00 195.00 585.00 Chambers, Douglas 3.00 220.00 660.00 Gravelle, Charles 1.00 145.00 145.00 Stager, Ronald 25.00 160.00 4.000.00 Wiatzka, Gerd 79.00 200.00 15,800.00 Wilson, Michael 10.00 67.50 675.00 Totals 121.00 21,865.00 **Total Labour** 21,865.00 Reimbursable Expenses Employee Expenses - D. Liles 469.18 **Total Reimbursables** 1.0 times 469.18 469.18 Consultants S. Lynn Bamberg, LLC Invoice 0912-3 3,420.00 **Total Consultants** 1.0 times 3,420.00 3,420.00 Total this Phase \$25,754.18 Phase 200 Field Program **Professional Personnel** Rate Hours Amount Liles, Darrell 20.00 175.00 3,500.00 Totals 20.00 3,500.00 Total Labour 3,500.00 Reimbursable Expenses Lab Charges - ALS Environmental invoice numbers 54094 and 54095 1,800.00

PAYMENT DUE UPON RECEIPT OF INVOICE



121 Granton Drive Unit No. 12 Richmond Hill, Ontario Canada L4B 3N4 Tel: (905) 764-9380 Fax: (905) 764-9386

Project	350180-203	RAML- Churc	h Rock RWPR R	emedial Action	Invoice	30604	
	Total Rei	mbursables		1.0 times	1,800.00	1,800.00	
				Total this Phase		\$5,300.00	
hase	300	Reporting					
rofessio?	nal Personnel						
			Hours	Rate	Amount		
Chung	j, Phillip		10.50	65.00	682.50		
Flemm	ning, Paul		.50	105.00	52.50		
Fonse	ca, Joan		.75	75.00	56,25		
Halbei	rt, Leigh		.50	85.00	42.50		
Hoosa	in, Diana		14.25	75.00	1,068.75		
Lowe,			3.50	185.00	647.50		
McCat	ffrey, Donald		6.00	85.00	510.00		
	Totals		36.00		3,060.00		
	Total Lab	our				3,060.00	
Reimburs	able Expenses						
	er CAD \$626.62				634.24		
	yee Expenses - P.	Chung CAD \$36.5	52		36.96		
•	S Supplies CAD \$1	_	_		10.20		
	• •	mbursables		1.0 times	681.40	681.40	
Jnit Billin	g						
	g Black & White				1,098.60		
	g Colour				715.50		
	Total Uni	ts		1.0 times	1,814.10	1,814.10	
				Total this P	hase	\$5,555.50	
				Total this In	voice IN U.S.	\$36,609.68	
Billings to	Date						
		Current	Prior	Total			
Labor		28,425.00	20,075.63	48,500.63			
Consu		3,420.00	13,337.24	16,757.24			
Expen	se	2,950.58	0.00	2,950.58			
Unit		1,814.10	0.00	1,814.10			
Totals		36,609,68	33,412.87	70,022.55			



121 Granton Drive Unit No. 12 Richmond Hill, Ontario Canada L4B 3N4 Tel: (905) 764-9380 Fax: (905) 764 9386

September 21, 2012
Project No: 350180-203
Invoice No: 30489

1,188.75

Rio Algom Mining LLC Attn: Rio Algom Mining-NM Highway 605 & 509 Grants, NM 87020 United States

Project	350180-203		Church Rock Red Water Pond Road Remedial Action COPPER INC. P.O. 4500672911			
Professional	Services for th	ne period ending Augu	ust 31, 2012			
Phase	100	Program Planning	& Preparation		ه ي يو	
Professional	Personnel					
			Hours	Rate	Amount	
Chamber	s, Douglas		42.00	220.00	9,240.00	
Lowe, Le	0		3.50	185.00	647.50	
Stager, R	lonald		32.50	160.00	5,200.00	
Wiatzka,	Gerd		12.50	200.00	2,500.00	
Wilson, N	/lichael		19.25	67.50	1,299.38	
	Totals		109.75		18,886.88	
	Total La	bour				18,886.88
				Total this	Phase	\$18,886.88
Phase	200	Field Program	# # # # # # # # # # # # # # # # # # #	# GBG GO # @# \$P#	AC 4 55 54 54 54 44	
Consultants						
•	Bamberg, LLC				7,636.07	
	nd Surveying				3,274.20	
Dinetahd					2,426.97	
	Total Co	onsultants		1.0 times	13,337.24	13,337.24
				Total this	Phase	\$13,337.24
Phase	300	Reporting				
Phase Professional		Reporting				
		Reporting	Hours	Rate	Amount	
Professional	l Personnel	Reporting	Hours 1.00	Rate 195,00	Amount 195.00	
	l Personnel	Reporting			,	

PAYMENT DUE UPON RECEIPT OF INVOICE

Totals

14.25



121 Granton Drive Unit No. 12 Richmond Hill, Ontario Canada L4B 3N4 Tel: (905) 764-9380 Fax: (905) 764-9386

				,
Project	350180-203	RAML- Church Rock RWPR Remedial Action	Invoice	30489
Total Labour				1,188.75
		Total this Phase		\$1,188.75
		Total this invoice		\$33,412.87

Billings to Date

	Current	Prior	Total
Labor	20,075.63	0.00	20,075.63
Consultant	13,337.24	0.00	13,337.24
Totals	33.412.87	0.00	33 412 87

Attorney Costs

Category	Individual	Hours	Subtotal	Total
Communications with EPA regarding UAO and				\$ 31,312.50
Work Plan revisions;				
Communications with Client regarding UAO				
response strategy;				
Communications with Navajo				
	LJN	26.7	\$13,350.00	
	MJK	47.9	\$17,962.50	
Legal Research and Writing Regarding the Basis				\$ 13,889.50
to Challenge the UAO and the Reimbursement				
Process				
	MJK	5.7	\$ 2,137.50	
	MMK	21.9	\$ 6,232.00	
	MAH	23.0	\$ 5,520.00	
Factual Development				\$ 8,059.50
	MJK	4.8	\$ 1,837.50	
	MAH	21.1	\$ 5,595.00	
	NEK	0.5	\$ 95.00	
	WGJ	5.6	\$ 532.00	
GRAND TOTAL		157.2		\$ 53,261.50